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# MINNESOTA MEDICINE

*Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society*

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APRIL, 1937

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## Contents

THE DOCTOR AND TUBERCULOSIS OF THE FUTURE. <i>H. E. Kleinschmidt, M.D.</i> , New York City	199
PRESENT STATUS OF FIRST INFECTION TUBERCULOSIS. <i>Viktor O. Wilson, M.D.</i> , Baltimore, Maryland	206
MALIGNANCY OCCURRING IN ADMISSIONS TO GLEN LAKE SANATORIUM. <i>Charles K. Petter, M.D.</i> , and <i>E. P. K. Fenger, M.D.</i> , F.A.C.P., Oak Terrace, Minnesota	209
THE NAME OF THE DOCTOR. <i>Arthur N. Collins, A.B., M.D., F.A.C.S.</i> , Duluth	215
THYROIDITIS. <i>Martin Nordland, M.D.</i> , Minneapolis	218
CHRONIC HYPERTHYROIDISM. <i>Thomas O. Young, M.D.</i> , and <i>Clement I. Krantz, M.D.</i> , Duluth	223
THE THERAPEUTIC USE OF CONVALESCENT SERUM IN MUMPS. <i>Robert G. Hinckley, M.D.</i> , Minneapolis	227
HYPERINSULINISM WITH RESECTION OF THE PANCREAS. <i>W. C. Carroll, B.S., M.D., F.A.C.S.</i> , Saint Paul	229
HEMORRHOIDECTOMY: A PLASTIC OPERATION. <i>Newton D. Smith, M.D.</i> , Rochester	233
A PROPOSED NEW DIAGNOSTIC TEST FOR PERIPHERAL ARTERIAL INSUFFICIENCY. <i>Gardner S. Reynolds, M.D.</i> , Ah-Gwah-Ching, Minnesota	236
FRACTURE OF THE OS CALCIS. <i>Walter Willard Nauth, M.D.</i> , Winona	238
CASE REPORT: The Gastric Anti-Anemic Factor in Subacute Combined Sclerosis. <i>John Francis Briggs, M.D.</i> , and <i>Harry Oerting, M.D.</i> , Saint Paul	239
EDITORIAL: Uncover Tuberculosis by Modern Methods Our Council on Pharmacy and Chemistry Duluth and the State University Annual State Meeting	241 241 242 243
IN MEMORIAM	244
MEDICAL ECONOMICS: County Officers Meet Distinguished Economic Speakers Your Notification Card Interest in the Survey Minnesota State Board of Medical Examiners	245 251 252 253 253
PRESIDENT'S LETTER	255
MINNESOTA STATE MEDICAL ASSOCIATION—EIGHTY-FOURTH ANNUAL SESSION—PROGRAM	256
OF GENERAL INTEREST	259
HOSPITAL NEWS	260
REPORTS AND ANNOUNCEMENTS OF SOCIETIES	260
WOMAN'S AUXILIARY	261
PROCEEDINGS OF THE MINNESOTA ACADEMY OF MEDICINE: Meeting of February 10, 1937	262
Spinal Cord Tumor. <i>E. M. Hammes, M.D.</i> , Saint Paul	263
A Suggestion in the Technic of Cholecystectomy for the Complicated Case of Gall-bladder Disease. <i>Harry P. Ritchie, M.D.</i> , Saint Paul (Abstract)	265
Malignant Hypertension. <i>Moses Barron, M.D.</i> , Minneapolis (Abstract)	266
BOOK REVIEWS	268

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# MINNESOTA MEDICINE

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Volume 20

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Number 4

## THE DOCTOR AND TUBERCULOSIS OF THE FUTURE\*

H. E. KLEINSCHMIDT, M.D.

Medical Director, National Tuberculosis Association  
New York City

I WISH briefly to outline first, what the future course of the tuberculosis problem may be, and second, what particular part the general practitioner, adjusting himself to the pressures of the times, may expect to play in the last act of the age-old drama of tuberculosis.

### I

Between Hippocrates' classic description of phthisis, the wasting disease, and our present-day conception of tuberculosis, is a long and rocky road. Heartbreaking disappointments litter this road but it is marked also by vivid milestones of progress on which we read the names of Laennec, Koch, Trudeau, Pirquet, Forlanini and others. Some thirty years ago a handful of courageous men decided that the time had come to marshal the meager medical resources of their day against tuberculosis. Since then progress has been on the march. The people have been aroused, hundreds of sanatoria dot the land, diagnostic facilities are everywhere and control machinery is in operation. Meantime reinforcements in the form of new discoveries and technical refinements have been added. At last man has the whiphand, and the sheer hopelessness that once clouded the problem of tuberculosis has given way to a spirit of aggressive confidence.

For each four deaths from tuberculosis in 1900 there was approximately one in 1935. The morbidity has apparently declined in like ratio, and, if we may rely upon straws in the wind, even the infection rate has declined markedly. There are still sectors of the tuberculosis front that puzzle and evade us, but the fact that we now break up our problem into component parts

and that instead of the older shotgun method we are today aiming rifle fire at target points of the enemy, is an indication that we are closing in on him.

We are so well along that certain leaders in public health believe that the tuberculosis movement has outgrown its traditional slogan. Merely to "fight tuberculosis," they say, is too low an aim—the time has come to set as our goal no less than the *eradication* of tuberculosis. Is that too ambitious? Conservatives hold that the phenomenal decline of tuberculosis during the past half century represents merely the down-stroke, artificially accelerated perhaps, of the normal tuberculosis cycle; a cycle which repeats itself approximately every century. In another generation, they predict, we shall witness tuberculosis again riding a mounting wave. But that dour prophecy takes no account of the effective means now at hand, to keep the ancient pandemic down. To the optimist it seems altogether probable that the downward trend of tuberculosis, whatever its biological explanation, can be maintained, which means that the vanishing point is not far distant. Strictly speaking, the eradication of tuberculosis implies the extinction of a species, the tubercle bacillus. This may be a biological impossibility—but, practically speaking, it is not necessary to exact so severe a demand to achieve our end. From an epidemiologic standpoint we may speak of the eradication of tuberculosis when cases are so few that they become individually conspicuous and therefore easily controlled as spreaders of the infection. To do this it is necessary only to throw the biological balance against the tubercle bacillus by continuously and strictly isolating all bacillary hosts, for unless the tubercle bacillus captures an equivalent number of new hosts to

\*The third annual John W. Bell Tuberculosis Lecture delivered before members of the Hennepin County Medical Society, December 7, 1936.

## THE DOCTOR AND TUBERCULOSIS—KLEINSCHMIDT

carry on its own succession, it is doomed to extermination.

No sooner does the tide of battle turn than the pursued becomes pursuer. In the past our chief concern has been defense, protection, escape. But in recent years our tactics have become aggressive. We are boldly undertaking now to search out tuberculosis in its many hiding places. Not content to wait until the disease strikes, we seek now to anticipate it before serious harm is done. That is the reason numerous communities are now experimenting with routine mass examinations of school children, college students and other youth groups. Already we have learned that the early case of tuberculosis in the adolescent is normally symptomless and will not be discovered in its early stage unless a deliberate and systematic hunt is made. And we know that infection in a young child means he has somewhere, sometime been in contact with an open case of tuberculosis. To run down that source is real preventive medicine. The cordon is being drawn tighter. Never before has anyone dreamed of attempting to ferret out infection in a whole population. We are flirting with the fantastic idea of eventually achieving tuberculin-free schools and communities just as we now actually have geographic areas free of tuberculous cattle.

Lest we forget, a word of warning to curb unreasonable hopes is in order. Granting the possibility of subjugating a microorganism, human nature must also be reckoned with—a human nature which is fitful and forgetful. Experience shows that a populace plagued by a disease enemy may be roused to such a pitch as to depress the danger to a vanishing point. When the menace no longer threatens, vigilance relaxes, and then the enemy sweeps once more into the unprotected ranks. For this reason the history of smallpox since Jenner's time is one of periods of quiescence, broken by sporadic recurrences, but never of absolute conquest.

In summary, these are the outstanding favorable factors:

A steadily declining death rate, a rising scale of living, an awakened public opinion.

Facilities at our disposal include: a good understanding of the pathogenesis, diagnosis and treatment of tuberculosis; an average of more than one sanatorium bed for each tuberculosis death; a network of diagnostic and control ma-

chinery, including an army of 10,000 public health nurses.

Among our modern weapons are: the tuberculin test; the x-ray; blood cell tests; the bronchoscope; collapse therapy.

Backing us up is the conviction that the continuous migration of the tubercle bacillus from person to person can be stopped. Reenforcing that effort is the aggressive movement to ferret out the disease and to prevent even infection. Spurring us on is the sporting chance of annihilating the enemy completely.

### II

What stake has the practicing physician in the prospect of eradicating tuberculosis? Why should he rejoice when one more sector of his traditional field is about to be cut off? And how shall he appraise the numerous social developments designed to speed the end?

To the credit of the American doctor, the record shows that he has from the very beginning of the organized fight against tuberculosis, generously joined hands with the non-medical crusader, fully agreeing with him that tuberculosis is not merely a disease of certain tissues but a social problem of first magnitude. This fine record should forever silence the criticism that doctors' interests are too narrowly limited to sick organs. Candidness, however, compels us to admit that by and large the doctor in his capacity of private practitioner has not shown extraordinary interest in tuberculosis. This is not surprising—the wonder is that he has not been even more disinterested. The management of a case of tuberculosis is anything but stimulating or satisfying. Consider the difficulty of making a precise diagnosis, the discouragement of finding the disease already advanced at the patient's first visit, the exasperating indifference of some patients and the hypochondria of others. Consider the uncertainty of treatment results, the household snarls to be untangled, the lure of quick cures competing with the physician's prosaic advice. Add to that the fact that the family doctor seldom has the satisfaction of seeing a case through from beginning to end: the wealthy patient scurries off to a health resort; the poor one to a free institution. Only a few—those of moderate means who struggle on with a diminishing income, stay with him while he continues, unpaid but uncomplaining, to carry their burden.

## THE DOCTOR AND TUBERCULOSIS—KLEINSCHMIDT

Neither the remuneration to be expected from, nor the advertising value of, the average tuberculosis patient would rate high on the stock market. Contrast with the discouraging job of caring for the tuberculous patient the satisfaction derived from an obstetrical case; a period of watchful care, a few intensive hours at the time of delivery when skill and daring are called into play, a week or two of convalescence and when all is over the doctor enjoys the confidence of a happy mother, the worship of a doting father and he adds to his list of potential patients a healthy young specimen whom it will be a pleasure to guide through the shoals of babyhood. Whatever the financial reward of his labors these fruits at least satisfy his soul.

The doctor's enthusiasm has been further damped by the very success of the tuberculosis fight. Easy accessibility to sanatoria and diagnostic clinics has all but taken tuberculosis as a medical problem out of his hands. The segregation of tuberculosis patients in sanatoria located usually far from centers of education has made it difficult for medical students to become adept in tuberculosis knowledge. Somewhat belatedly this error was recognized and in various ways and places the clinical material and experience of the sanatorium are now being made available to medical students and practicing physicians. Yet the inclination is to regard tuberculosis as something for institutional medicine to worry about. And while the medical profession has been unusually tolerant toward free diagnosis and treatment services for the tuberculous, it is unquestionably true that these privileges, intended for the ultimate benefit of the community and not for its pauperization, are occasionally abused.

The growing practice of group testing with tuberculin and x-ray is another social-medicine activity, the significance of which to the general practitioner merits thoughtful discussion. Medical societies which have considered the problem, with few exceptions, have concluded that it does not injure private practice. To make people aware of a threatening situation helps rather than hinders the best interests of the family doctor. Moreover, health departments and tuberculosis associations, which have taken up this kind of work, look toward the day when parents will seek the opportunity to have their children regularly tested with tuberculin and the x-ray. Yet none will deny that so-called tuberculin surveys

represent another invasion of organized society into the field of medicine, and therefore whether good or bad, it is of vital concern to the profession.

Whatever the private practitioner's attitude toward tuberculosis may be, and however he may view the social developments growing out of it, he is still the keystone of the arch. Statistics showing the number of patients cared for in diagnostic clinics and in sanatoria, give the impression that practically all tuberculosis work has been withdrawn from the general practitioner. That bland assumption is far from the truth. Of the approximately 650,000 active cases of tuberculosis in the United States today only about one-seventh are in hospitals and sanatoria and most of these have passed first through the hands of the private practitioner. The other six-sevenths, a half million more or less, are for the most part under the care of general practitioners or specialists. All too many are in the hands of quacks and a considerable number are muddling along without care of any kind.

### III

Merely to do our bounden duty toward this army of half a million sick, particularly in the face of the stimulating prospect of eradicating tuberculosis, is far too low an aim. Tuberculosis work of the immediate future throws out a challenge for a finer, more complete service than we have been able to render in the past. It is two-fold—to perfect the practices with which we are already familiar and to add services not commonly offered by the family doctor in the past. Only a few of the items of modern tuberculosis practice can be discussed here.

*Early Diagnosis.*—Those who see the steady stream of patients entering the tuberculosis sanatorium deplore the all-to-evident delay in making the diagnosis. About five out of each six patients in our sanatoria throughout the country are classified on admission as advanced cases of tuberculosis. And this ratio has not improved to an appreciable extent for the past ten years, during which time an enormous amount of education of the people concerning the early danger signs of the disease has been carried on. One reason for delay in diagnosis is undoubtedly to be found in the lethargy of the people, coupled with the common human failing of not wishing to face unpleasant facts. Another reason is that the transi-

## THE DOCTOR AND TUBERCULOSIS—KLEINSCHMIDT

tion from early, "silent" tuberculosis to the moderately advanced stage, is often a relatively swift one and only by the barest chance is the case in the minimal stage detected. To what extent can the practicing physician increase his batting average of discovering the disease in its incipiency?

Much improvement can be brought about by a constant alertness. No dragnet method will do—to find early tuberculosis it is necessary to have it in mind and to search diligently for it. Unless one is "tuberculosis conscious" slight clues are likely to be overlooked. More prompt use of the x-ray will help. The roentgenograph has passed beyond the stage of merely furnishing confirmation for percussion and auscultation findings; there are, in fact, able defenders of the thesis that what the experienced eye sees on a good roentgenograph is far more revealing than what the ear can hear through the stethoscope. Prompt consultation with the specialist also needs emphasis. Delay in securing the assistance of a phthisiologist in case of doubt is no more excusable than is the delay of the patient in seeking medical aid. In nearly every community today expert diagnostic aid is to be had even for those unable to pay. Last, but not least, the routine use of the tuberculin test is a measure every general practitioner may well adopt. A positive reaction in an adult means little, to be sure, but a negative reaction, when the diagnosis is in doubt, speaks volumes and generally rules out the necessity of following the tedious clue of tuberculosis further. Why not do the tuberculin test, as Krause has repeatedly recommended, at the very beginning of the physical examination and settle the question at once as to whether or not tuberculosis should be searched for?

The designation "suspicious case" is one which some believe should be abolished from the doctor's vocabulary. Certainly it is no longer necessary or justifiable to wait in a suspected case until unmistakable symptoms appear or until the sputum is positive, before making a diagnosis. The new era with its instruments of precision demands the clearing up of the contents of the old "suspicious" grab bag.

*Contact Follow-up.*—The second opportunity which the general practitioner can enlarge to his own benefit as well as the patient's is sounder and more thorough contact follow-up work. It is needless here to emphasize the extreme importance of contact. Every doctor now knows that

a diagnosis of tuberculosis, no matter how precise, is incomplete if limited to the single patient. Tuberculosis is a household epidemic; the patient before you may be but one focus of it. The responsibility of the family doctor is not discharged until he is sure of the physical status of every member of the family. The slogan "From whom did he get it—To whom has he given it?" should be touched off in the doctor's mind whenever he has a case of tuberculosis before him.

Contact follow-up work is at best far from being satisfactory. In the very efficient clinic conducted by the Henry Phipps Institute it was possible after a year of systematic follow-up visitation involving hundreds of calls, to persuade only 48 per cent of known contacts to report for an examination. It is true that among those who did come the disease was discovered in 11 per cent, a rich reward indeed for the tedious effort, but the disconcerting fact remains that only about one-half of the persons definitely exposed to tuberculosis could be persuaded to have an examination. Can contact work be improved?

Korns demonstrated that it can. In Cattaraugus County (N. Y.) contact examination has been for years a major activity of the Bureau of Tuberculosis. During the period 1923-1930, 52 per cent of contacts were examined. In recent years, Dr. Korns, the director of the bureau, has himself assumed a definite share of the responsibility of educating the patient in order to facilitate the work of the public health nurse. In the period that followed, namely, 1931-1935, the number of contacts examined was 62 per cent, an increase of 10 per cent.

Not only was there an increase in the number of contacts examined, but the time interval between discovery of the case and examination date of the contact, was shortened by Korns' intensive efforts. In the period 1923-30, 48 per cent of contacts under twenty years of age were examined within six months, whereas in the period 1931-35 almost twice as many, 87 per cent, were examined within the first six months. Excellent as the case-finding machinery in Cattaraugus County had been, it was materially improved in efficiency by the personal effort of the doctor.

*Management of the Patient.*—The general management of the tuberculous patient in the hands of the general practitioner can be vastly improved. The acutely sick person needs a dictator and fortunately wants to be bossed—at least

## THE DOCTOR AND TUBERCULOSIS—KLEINSCHMIDT

until convalescence. But the tuberculosis patient is engaged in a long drawn out struggle, the outcome of which depends almost entirely upon what he is willing to do for himself. Tuberculosis is more than a pair of sick lungs; it is a pathological condition of the whole man, physically and emotionally, and affecting even his family. Someone must teach him how to reorganize his whole life. He must learn to captain his own ship (with the doctor's guidance during the worst storms) through many troubled waters. The only other alternative is to resign himself to a mill-pond existence for the rest of his life—a defeatist attitude we cannot tolerate today. Records of past performance of doctors in teaching their patients are not flattering. For instance, Williams and Hill, who studied the experiences of 1,499 tuberculosis patients handled by private practitioners, found that 42 per cent were not instructed how to dispose of their sputum, 47 per cent were not told to use only their own dishes, 37 per cent were not cautioned to sleep alone, and only 17 per cent were given printed or written instructions. Certainly that record has been bettered in the past few years but there is still room for improvement.

Incidentally, it was Osler's struggle with the management of his tuberculous patients, that prompted him to send a young woman medical student into their homes to instruct them and their families and to see that orders given in the office consultation were understood and carried out. That experience was one of the factors responsible for the public health nurse movement.

Management of the patient includes the determination of the form of treatment to be prescribed. Shall the patient before you be referred to a phthisiologist, or be sent to the sanatorium, or can he be trusted to a cure at home? Most pertinent in this modern day is the question as to whether or not the lung should be collapsed. Pneumothorax is indicated in perhaps 50 per cent of cases of active tuberculosis and sometimes the figure runs as high as 80 per cent. In deciding the question not only the welfare of the patient but also the interests of society must be considered, for one of the chief advantages of lung collapse is that it quickly renders the patient's sputum negative. Pneumothorax should be undertaken only by the physician skilled in its technic and experienced in

its indications but no doctor who undertakes to manage a case of tuberculosis can afford to be ignorant of its values and applications.

Modern management must also include a consideration of the patient's rehabilitation after recovery has been achieved. Training and placement on the right job are essentials in the treatment of tuberculosis. To neglect them is to invite relapse. The family doctor cannot be expected to have a detailed knowledge of working conditions and employment trends, but just as he depends upon others for sputum analysis and x-ray service, so he should be able to guide the patient to social resources of the community competent to readjust the patient to normal living.

*Determining Date of Infection.*—Our vista of the future of tuberculosis includes a virgin field begging to be occupied by the up-to-date practitioner. It has to do with the anticipation of tuberculosis, not merely its detection when patients come to him on their own initiative. Tuberculin test surveys have led the way and have prepared the people for the acceptance of a service not yet commonly offered by the family advisor. Why should not the family doctor provide this form of insurance against tuberculosis? Years ago Sir Robert Philip advocated the tuberculin testing of all children annually from shortly after birth until the first positive reaction appears. Determining not only the fact but also the approximate date of infection, he said, would help enormously in locating the source of infection. So long as the child reacts negatively all is well. When the test for the first time becomes positive the doctor knows that the infection has taken place in the past twelve months. This narrows his search down to the events of the immediate past and increases the possibility of putting his finger on the source. Moreover, knowledge of a recent infection puts the doctor on his guard, for while it is true that the first infection usually heals spontaneously it does seem wise to shield the child during the period of activity of the primary lesion and to give him every favorable chance. Somehow Sir Robert's idea has never caught on. He was perhaps ahead of his time. The time seems ripe now, however, to try out the scheme seriously. With a little encouraging publicity on the part of health educators it should not be difficult to create a demand among intelligent parents for

## THE DOCTOR AND TUBERCULOSIS—KLEINSCHMIDT

this kind of medical service. Such a plan fits in admirably with the modern trend of pediatric practice which emphasizes health guidance of the growing child.

From an epidemiological standpoint testing young children is far more productive than testing older ones. If the object were to find the maximum number of positive reactors we should, of course, examine older age groups, say adolescents, for the infection rate rises steadily with increasing age, but by that time the infections of many are already long established. A 15-year-old-boy, for example, has many contacts outside the home and school and to search out the source of his infection is a discouraging task. The pre-school child, however, has had but few contacts and those mostly in the home. Therefore his tuberculin reaction is a much sharper clue. Radeker, who examined large numbers of children in the Ruhr area shortly after the war when conditions were most deplorable, found that 20 per cent of infants reacted to the Pirquet tuberculin test, whereas of 13-year-old urban children, 80 per cent reacted. But in the case of infants he was able to locate the sources of the infection in 90 per cent, whereas among the older children his search was successful in only 20 per cent.

If parents can be persuaded to have their young children tested with tuberculin periodically, it should be equally possible to establish the practice of having adolescent children x-rayed regularly during their growing-up period. We may find after the experimentation now going on in many communities that the college and high school health services can do this more efficiently and economically by the routine method but that will not absolve the private practitioner who sets himself out to be the family health advisor, from his responsibility.

*Care of Children.*—There is also the question of the care of children found to be positive reactors, and those with roentgenograph shadows of primary lesions. What action is the doctor likely to take when a parent comes to him bearing a notice from the school physician that her child is a positive reactor? The intention is that he should try to answer the question why this child is infected, that he should investigate all possible contacts and exclude the possibility of further infection. Actually we know that not a few doctors pay scant attention to such notifica-

tions, and some are known to criticize the school doctor for "meddling." Another group of doctors welcome the suggestion that the positively-reacting child be studied but would dismiss all such cases (after having satisfied themselves that they are not in contact with an open case) with the dictum that the first infection or so-called childhood type of tuberculosis is always benign and hence needs no treatment. Certain experienced observers, however, caution that neglect of the child with demonstrable lesions is dangerous. Pope states that children with a positive reaction plus childhood type lesions are much more likely to develop phthisis than positive reactors without such lesions, and Rathbun's earlier calculations indicate that a child with demonstrable primary lesions is about twenty-seven times more likely later to develop serious tuberculosis than a child without such lesions. The rational advice seems to be that all children with so-called benign lesions be placed under observation until they have safely weathered the stormy period of adolescence.

A few years ago a keen interest in preventoria spread over the country. The feeling was that the vast army of "pre-tuberculous" children need a special kind of care. At present the soundness of the idea that the preventorium is a means of combating tuberculosis, is being re-examined. One argument in favor of the preventorium is that it is necessary to break the contact by taking the child out of the home, to which it is replied that a better way of achieving that end is to remove the active case to a sanatorium. Another argument is that infected children should be protected against strain and that they need to be taught how to lead a healthy life; to which is answered that what the preventorium does for the child should be available to him in the average home with the coöperation of the school. How to bring about that ideal is, of course, another matter. Certainly in large industrial centers with their heavy quota of "problem families" or in areas where the prospects of securing sanatorium beds are poor, or under other unfavorable circumstances, the preventorium serves a useful purpose. Given adequate social facilities, there is no medical need of the infected or contact child that cannot be met by the private doctor.

*Team Work.*—The several fields here briefly sketched will be properly occupied by the doctor

## THE DOCTOR AND TUBERCULOSIS—KLEINSCHMIDT

only if he is willing to gear his practice into the present public health and social machinery. Finding new cases, detecting early infection, instructing the patient; these are among his many responsibilities. But he is not a teacher, social worker nor administrator. His office is, however, a clearing house in touch with all the agencies coming in contact with the problems of the tuberculous. The aid of the specialist, the help offered by the sanatorium, the diagnostic clinic, the tuberculosis association and the facilities of welfare agencies are his for the asking. Co-operation with the health department is particularly necessary. To make this co-operation easy the health department asks for a report of all cases of communicable diseases of which tuberculosis is one. This is not an arbitrary request but is one made for the welfare of the doctor, the patient and the public. Yet, the experience of health departments in the country as a whole reflects scant credit on the medical profession.

Even in a state (New York) where case reporting is better than the country's average, only 24 per cent of the cases on record were reported one year or more before death, while 45 per cent were reported after death. The reasons for such lukewarm co-operation are too many and complex to discuss here but none are unsolvable. Numerous health departments have demonstrated that a mutual confidence between doctors and the officials results in an enormous improvement in case reporting.

In the new era the physician will continue, as he has in the past, to participate in the broad tuberculosis movement. This movement is not, as some designate it, a "lay" enterprise nor, as others think, a medical activity, but an instru-

ment of democracy. The voluntary health association is the voice of the people in matters pertaining to health. This "voice" looks to the medical profession for guidance in medical matters, but the doctor serves as a participant—not as dictator. Is it not significant that the tuberculosis associations of this country based on the principle of partnership have stood the test of time, have spread a network over the entire country and have succeeded? For our own good and for the general welfare we must continue to be part and parcel of the movement.

### Summary

1. The steady downward trend of tuberculosis, the recent discovery of new measures for dealing with it and the organized efforts now being made, support the hope that tuberculosis can be eradicated in the near future.
2. In spite of the many public and social facilities for combating tuberculosis the general practitioner still plays the major role. While his interest in tuberculosis generally is a fine public-spirited one, tuberculosis as a private medical problem is difficult, not very satisfying and complicated by numerous social implications.
3. There are, however, certain new services and improvements of old ones that the general practitioner can render to speed the success of the effort to reduce tuberculosis to a controllable minimum.
4. If the general practitioner will gear his efforts into the complex social machinery now existing, both he and the people will be the gainers. Success of the dream to free mankind of his ancient enemy depends now upon co-operation, persistence and courage.

## PRESENT STATUS OF FIRST INFECTION TUBERCULOSIS\*

VIKTOR O. WILSON, M.D.  
*Baltimore, Maryland*

THREE reasons have prompted my choice of the title of this paper: First, the disease is sufficiently new and the latest knowledge has been so recently acquired that it should command interest. Second, several Minnesota clinicians have been leading contributors to the newer knowledge of first infection tuberculosis. Minnesota definitely leads the rest of the nation in the development and use of these facts. And third, the newer knowledge of first infection tuberculosis has placed this disease distinctly within the responsibility of the family physician.

First infection tuberculosis has previously been known as epituberculosis, hilum disease, and the childhood-type of tuberculosis. The weight of evidence indicates that its pathogenesis depends upon the allergic response of normal tissues to the first implantation of tubercle bacilli. Myers<sup>3</sup> states, "The reaction of the human body to this first contact with the tubercle bacillus is so characteristic and so different from subsequent contacts that it appears to be an entirely different disease." The first attack of tubercle bacilli on human tissues is the result of contact with a person or animal suffering from tuberculosis or carrying tubercle bacilli for tuberculosis is a contagious disease. Following this first implantation of tubercle bacilli, there is an incubation period estimated by Stewart<sup>6</sup> as three to eight weeks, and by Wallgren<sup>7</sup> as three to seven weeks. During this time the patient shows no evidence of illness.

Through this incubation period, the bacilli, acting as foreign bodies, stimulate the cytological defense mechanism of the tissues, and, through it, the formation of the primary tubercle. All of the tubercle bacilli do not become immediately fixed at the point of original implantation. In fact, some of them drain into the regional lymph nodes. Here they cause tuberculous adenitis with its surrounding inflammation and this phase of the process was previously known as hilum disease. This combination of a primary tubercle and regional lymphadenitis is now referred to as the primary complex.

As the process reaches this developmental stage

the patient becomes febrile. Fever, then, is the first manifestation of the patient's systemic reaction to tuberculoprotein, the toxin produced by the tubercle bacilli. This fever may be so low and transitory as to pass unobserved, or intense local reactions may develop about the newly formed tubercles and reach immense proportions. When the latter occurs, the febrile reaction may be great and persist for as long as five months.

Soon after this manifestation of toxemia, the positive skin reaction to tuberculin can be elicited. Thus the patient has passed through the pre-allergic stage and has acquired a sensitivity or allergy to tuberculin which may be of lifelong duration. This sensitivity or allergy to tuberculin is now known to be requisite to the development of the reinfection or adult destructive type of tuberculosis.

Finally, or, at least, usually, resolution follows with scar formation and calcium deposition. This stage extends over a two to four year period and terminates with the formation of calcified Ghon tubercles and glands.

First infection tubercles may be single but are usually multiple. They may be microscopic in size, or the surrounding inflammation may involve a whole lobe of the lung. This pneumonic type of consolidation of the primary lesion was the first to attract attention and has become known as the typical lesion of the disease. This lesion, however, is practically never seen after infancy. Also, while many first infection lesions are sufficiently large to be detectable by x-ray films, the majority are microscopic in size. Although they may form and may be present in any tissue in the body, the only tissues in which they can be easily demonstrated by x-ray study are the lungs.

During the incubation period, before the tissues become sensitized to tuberculin, there is no diagnostic agent available to determine the presence of tuberculosis. After the development of allergy, a positive tuberculin skin test will always identify those patients who have the first infection type of tuberculosis and who, consequently, are susceptible to the more serious reinfection forms of the disease.

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## FIRST INFECTION TUBERCULOSIS—WILSON

Formerly it was believed that many people first became infected with tubercle bacilli in early infancy. In the groups tested in the first decade of this century, nearly one hundred per cent of even young adults reacted positively to the tuberculin test. Many European cities reported a high percentage of young children positive to the test, as for example, Gratz, 58 per cent, and Vienna, 94 per cent. The tuberculin test, therefore, was discredited. In 1924, Slater<sup>5</sup> found only 11 per cent of Minnesota rural school children reacting positively to the von Pirquet test.

This is a distinct contrast with the present prevalence of tuberculous infection. In 1934, the Minnesota State Sanatorium epidemiologist, working in the smaller cities and rural areas of Minnesota, found only 6 per cent of the school children reacted to the Mantoux test. Lees and Myers<sup>2</sup> have shown that the incidence of positive tuberculin tests among university adults declined from 32 per cent in 1928 to 24.9 per cent in 1932. Group testing has shown that, at the present time, only a small percentage of infants and children of Minnesota are infected with tubercle bacilli and the number is rapidly decreasing. It is now safe to say that most people reach adult life before they are invaded by the tubercle bacillus. Many have their first contact with the germ in old age and some pass a lifetime without becoming infected with tuberculosis. Thus, the tuberculin test becomes increasingly important in the diagnosis of tuberculosis. To the family physician who treats all diseases, an examination is not complete without it, and, by its routine use, the practitioner is soon aware of the location and extent of tuberculosis in his practice.

The diagnosis of first infection tuberculosis is a relatively simple task. A positive tuberculin test identifies those who have a focus of tubercle bacilli somewhere in their bodies. It does not indicate whether it is a primary lesion or the adult destructive type. Neither does it tell the stage of progress, age, or location of this tubercle. A history of the patient's past illnesses is not likely to be significant because first infection tuberculosis does not cause distinctive symptoms. History of exposure to tuberculosis is important if present, but, if absent, is of no value. A history of erythema nodosum is particularly significant. Wallgren<sup>7</sup> observed seventy-five cases of erythema nodosum in which the Mantoux test was

negative before and positive after the erythema. In a number of his cases, the date of tuberculous infection was known, and the erythema nodosum immediately preceded the allergic stage. This does not mean that all erythema nodosum is tuberculous.

Physical examination of patients with first infection tuberculosis is remarkable for the paucity of findings. Even the pneumonic consolidation type may not reveal physical signs, or, at most, there will occasionally be slight changes in resonance and whispered voice. Râles, usually, are not present. Of course, if the lesion is superficial, as in cervical adenitis, it is easily found.

During the period of toxemia, when the patient is developing sensitivity to tuberculoprotein, an increased blood sedimentation rate is found. Only rarely do these cases have positive sputum. In children tubercle bacilli are found by examination of stomach washings, feces, or smears from pharyngeal swabs. These examinations are used when the patient cannot, or does not, expectorate.

The x-ray plate is of limited value in the diagnosis of first infection tuberculosis. This is due to the fact that only a few lesions or their subsequent changes cast shadows demonstrable on the x-ray film. The lesion may not be in the lung; or, if in the lung, it may be obscured by such denser tissue as the heart, diaphragm or ribs. When shadows are present on the thoracic x-ray film they may be single or multiple and may vary from barely perceptible size to large, homogeneous, lobar consolidations. Cavitation is rarely present. The shadow may extend outward from the hilum in fan-shaped outline. When such a shadow extends posteriorly, it appears in the antero-posterior film as simple hilar enlargement. Hence, lateral or oblique films may be required to demonstrate the lesion. Calcification is a prominent roentgen-ray characteristic of first infection tuberculosis. All lesions do not calcify and in some instances calcium is absorbed. Many leave permanent, dense, calcified scars.

Employment of all these diagnostic measures, a detailed history, careful physical examination, laboratory tests including the Mantoux test and x-ray study, seldom leaves the diagnosis undetermined. Infrequently, a mildly sick infant or child is seen in whose examination no abnormal findings except a positive Mantoux test can be demonstrated. Even in such a case the positive

## FIRST INFECTION TUBERCULOSIS—WILSON

tuberculin test alone indicates the presence of a tuberculous focus. Though the lesion cannot be found, the patient is subject to all of the dangers of reinfection tuberculosis, either endogenous or exogenous, and consequently warrants practically as much attention as the child with extensive, easily demonstrated, primary tuberculosis.

In the past much has been written about the treatment of first infection tuberculosis. Myers<sup>3</sup> and Stewart<sup>4</sup> from their experiences at Lymanhurst School conclude that no special medical treatment of these cases requiring institutionalization is necessary. On the other hand, certain precautions in the management of such cases have been emphasized. Wallgren<sup>5</sup> has frequently observed tuberculous meningitis develop during the febrile stage of first infection tuberculosis. He believes that, if the patient is kept in bed four to six weeks after the fever subsides and the sedimentation rate has returned to normal, there will be an appreciable decline of tuberculous meningitis in children. Several arguments are put forth in favor of a program of treatment for this disease. In the first place, a child with a positive reaction to tuberculin is allergic to the tubercle bacillus and its toxins. These children are, therefore, candidates for the serious reinfection forms of the disease such as consumption, Pott's disease, or meningitis. They have foci of live, virulent tubercle bacilli in their bodies. Robertson,<sup>6</sup> after examining at autopsy the calcified scars of aged persons, demonstrated that tubercle bacilli may remain alive and active throughout a lifetime. Furthermore, serious reinfection types of tuberculosis are known to develop from these endogenous sources. As already mentioned, Wallgren<sup>5</sup> has noted the occurrence of meningitis complicating first infection tuberculosis. Myers<sup>3</sup> has stated that 10 to 20 per cent of such patients eventually develop reinfection tuberculosis.

Inasmuch as death resulting from the first infection type of tuberculosis is extremely rare, it is obvious that a program of treatment which will best prevent reinfection, either endogenous or exogenous, is indicated in this disease. Such a program should embrace four features. Of first importance is the separation of the patient from the source of infection. At the present time in Minnesota, with bovine tuberculosis controlled, the source of infection is usually a human case with positive sputum. Separation is

best accomplished by isolating the positive sputum case in a sanatorium. First infection tuberculosis patients should not be segregated in institutions. Institutional care, with its danger of cross infection involving acute infectious diseases, has no influence on the tuberculosis superior to that of care in the home. Burns,<sup>1</sup> in 1929, called attention to the unsatisfactory procedure of institutionalizing childhood tuberculosis, and the preventorium at the Minnesota State Sanatorium was discontinued in 1930. Today, preventoria are being closed to these patients.

Second, bed rest is imperative during the toxemia of the allergic stage. Such rest should extend over a period of four to six weeks after the disappearance of fever and the return of the blood sedimentation rate to normal. This rule should result in an appreciable decline in the serious reinfection tuberculosis superimposed upon the first infection type.

Third, after the allergic stage, and while the primary lesion is undergoing resolution and calcification, the patient should receive the benefit of extra rest, good food including vitamins, fresh air and hygienic surroundings. Such measures are advocated with the hope that the tuberculous focus will become strongly and permanently walled off.

Finally, it is important that the family physician establish an x-ray and physical examination routine at frequent intervals. This not only ensures the patient's observance of treatment, but also aids in detecting the adult destructive form at the earliest possible moment. The radiograph is the only infallible means of identifying reinfection pulmonary tuberculosis in the early, easily cured, presymptomatic stage. Physical examination should bring early spine or joint tuberculosis under treatment while there is hope of preventing serious deformity or disability.

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## MALIGNANCY OCCURRING IN ADMISSIONS TO GLEN LAKE SANATORIUM\*

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SINCE our report of eight cases of coexistent cancer and tuberculosis in 1929, we have carefully watched the admissions to Glen Lake Sanatorium for the occurrence of cancer. The results of this observation and some comments on malignant neoplasm and tuberculosis constitute the basis of this report. To the group of patients who showed coexistent malignancy and tuberculosis we have added another group which is of special interest to phthisiologists in that these patients were sent to the sanatorium with diagnoses of various forms of tuberculosis and were, after some study, found to have, instead, a malignant neoplasm.

The simultaneous occurrence of malignant neoplasm and tuberculosis in the same patient or tissue, as well as the infrequency of the combination have been the basis for the wealth of medical literature. No attempt will be made in this paper to review and correlate these many case reports and discussions, but a brief statement of some of the varied opinions expressed will, I am sure, prove interesting.

One group of observers advances the opinion that malignancy and tuberculosis are mutually antagonistic. This viewpoint was first taken and vigorously defended by Rokitawski in 1841. The most recent and comprehensive paper on this subject is that of Pearl, which is a report of autopsy findings in several series of patients. In 816 individuals with malignancy he found 6.6 per cent showing active tuberculosis as compared with 16.6 per cent tuberculosis in an equal number without cancer. Conversely in a series of 886 patients (both sexes) with active tuberculosis 1.2 per cent were found to show malignancy. This group was controlled by an equal number of patients with no recorded tuberculosis who showed malignant tumor in 9.3 per cent. From

this he concludes that the diseases are antagonistic and that coexistence is therefore rare.

Another opinion, well supported by experimental work and statistical material is that tuberculosis predisposes to cancer, because of the prolonged chronic inflammatory nature of the tuberculous process. Thomas Cherry of Melbourne has in the past several years carried out a great amount of experimental work to prove this point, and Ewing considers pulmonary tuberculosis a vital etiologic factor in the development of broncho-pulmonary malignancy.

Cherry has recently published a report in which he reviews his previous work, experimental and statistical, and adds a statistical report which is very interesting. This author noted in the mortality tables for Great Britain and Australia, that the combined death rates from tuberculosis and cancer approximated 20 per cent. For the ten year period ending in 1851 the death rate for cancer was 4 per cent, while that for tuberculosis was 16 per cent. In the period from 1922 to 1931 cancer scored 15 per cent and tuberculosis between 4 and 5 per cent. From this he concludes that as the more progressive races become resistant to repeated infections with tuberculosis the individuals do not develop the usual picture of tuberculosis, but rather develop cancer. This conclusion is further supported by his recent experimental work with mice repeatedly infected with tuberculosis. Cherry noted that these animals developed a lymphocytic reaction microscopically similar to that seen in mice who developed tumors and malignant ulcers of the intestine.

Dermatologists have long considered lupus as a forerunner of epithelial malignancy and this sequence of events has been noted frequently.

A third group of observers have contended that the existence of malignant neoplasm and tuberculosis in the same individual is merely a coincidence, there being neither antagonism between the two nor a tendency for one to lead to the other. Carlson and Bell in 1929, reviewing

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## MALIGNANCY AND TUBERCULOSIS—PETTER AND FENGER

eleven thousand postmortem examinations found no evidence to support the theory of antagonism. Eppinger also adheres to this idea that there is no inter-relation between malignant neoplasm and phthisis.

In 5,905 first admissions to Glen Lake Sana-

parallels that reported by Pearl, of 1.2 per cent.

An analysis of the cases in which tuberculosis existed along with a malignant neoplasm (Table I) shows twenty-three with far advanced, eleven with moderately advanced, and five with incipient pulmonary tuberculosis, while three patients

TABLE I. FIFTY-NINE CASES OF MALIGNANCY ADMITTED TO GLEN LAKE SANATORIUM

Group		No. Cases
1	F. A. pulmonary tuberculosis with malignancy	23
2	M. A. pulmonary tuberculosis with malignancy	11
3	Inc. pulmonary tuberculosis with malignancy	5
4	Bone tuberculosis with malignancy	3
5	Malignancy without demonstrable tuberculosis	17

TABLE II. TWENTY-THREE CASES OF FAR ADVANCED PULMONARY TUBERCULOSIS WITH MALIGNANCY

Case	Sex	Age	Malignant Lesion	Metastases
204	F	50	Carcinoma of breast	
616	M	46	Bronchogenic carcinoma	Spine
634	M	48	Sarcoma of eyeball	
704	M	65	Carcinoma of stomach	Liver and nodes
1308	M	50	Papilloma of antrum	
1670	M	62	Carcinoma of stomach	
1863	F	20	Cerebral glioma	
1897	M	48	Malignant epidermoid of face	
2285	M	57	Papillary carcinoma of sigmoid	
3231	F	43	Medullary carcinoma of breast	
3612	M	68	Hypernephroma	Thyroid
3663	M	65	Carcinoma of penis	
3805	M	63	Basal cell carcinoma of face	
3950	M	42	Carcinoma of tongue	
4006	M	72	Carcinoma of stomach	
4391	F	47	Scirrhus carcinoma of breast	
4754	F	25	Melanoma on foot	General
5033	M	58	Basal cell carcinoma of cheek	
5148	F	61	Papillary cystadenoma of ovary	
			Carcinoma of ascending colon	Liver
5713	M	67	Multiple myeloma	
5891	F	32	Carcinoma of pancreas	
6130	F	36	Epithelioma of cheek	
6319	M	31	Carcinoma of penis	Nodes

torium, malignant neoplasm of some organ has been encountered in 59 individuals, or 1 per cent. Of these fifty-nine patients, forty-two had both malignancy and tuberculosis, while seventeen showed malignancy only. Deducting from the total admissions all patients diagnosed as non-tuberculous we find that the incidence of combined tuberculosis and cancer in our group very nearly

presented an osseous tuberculosis with cancer in some viscera.

In the far advanced pulmonary group (Table II), the age range was from twenty-five to seventy-two years, averaging fifty, with males predominating fifteen to eight. Malignancy was encountered in the following structures in the frequency given: skin 5, stomach 3, breast 3, penis

## MALIGNANCY AND TUBERCULOSIS—PETTER AND FENGER

2, ascending colon 2, with eight other structures involved singly. One patient with carcinoma of the ascending colon and liver metastases had also a papillary cystadenoma of one ovary. Another patient presented a bronchogenic carcinoma with metastases to the spine and another a hypernephroma with thyroid metastasis, while a fourth

noma of the maxilla, esophagus, sigmoid, prostate and lung each complicated the tuberculosis in five cases. The bronchogenic carcinoma in this one case (No. 5762) proved extremely difficult to differentiate from the pulmonary tuberculosis in the same lung. Only the rapid decline of the patient (whose sputum was nega-

TABLE III. ELEVEN CASES OF MODERATELY ADVANCED PULMONARY TUBERCULOSIS WITH MALIGNANCY

Case	Sex	Age	Malignant Lesion	Metastases
549	M	55	Carcinoma of maxilla	
551	M	58	Epithelioma of face	
1007	F	52	Carcinoma of breast	Ribs sternum Nodes
1355	F	55	Scirrhus carcinoma of breast	
2073	M	47	Carcinoma of esophagus	
2224	F	66	Carcinoma of sigmoid	
2916	M	50	Carcinoma of stomach	Liver
3177	M	60	Epithelioma of face	
4048	M	55	Carcinoma of stomach	
5466	M	70	Carcinoma of prostate	
5762	M	66	Bronchogenic carcinoma	

TABLE IV. FIVE CASES OF INCIPENT PULMONARY TUBERCULOSIS WITH MALIGNANCY

Case	Sex	Age	Malignancy	Metastases
1134	F	36	Adenocarcinoma of ascending colon	
3770	M	57	Carcinoma of stomach	Liver, lung
5300	M	39	Carcinoma of stomach	Kidney (?)
5359	F	54	Adenocarcinoma of sigmoid	
5708	M	54	Bronchogenic carcinoma	2nd Lumbar vertebra.

showed general metastases from a malignant melanoma, and two others with carcinoma of the stomach and penis, respectively, showed secondary invasion of regional lymph nodes only. None of the cancerous lesions in this group produced pulmonary metastases and only one case (No. 616) showed an inter-relation of the two diseases, namely pulmonary tuberculosis and bronchogenic carcinoma of the same lung.

The moderately advanced pulmonary group is made up of eleven cases, eight males and three females, ranging in age from forty-seven to seventy years, and averaging fifty-eight (Table III). In this group, epithelioma of the skin of the face, carcinoma of the breast, and carcinoma of the stomach each occurred twice while carci-

tive), unexplained by the x-ray appearance of the chest until an extensive atelectasis developed, made the presence of malignancy a clinical possibility.

Case 2916, which we reported in detail in 1929, presented an interesting pathologic finding, not encountered in any of our other cases where thorough anatomic study was carried out. Tubercle formation, normal gastric mucosa and carcinoma cells were found in the same microscopic field, while another section of the stomach showed a typical tubercle completely surrounded by tumor cells (Table V). This patient then had a combined tuberculosis and carcinoma of the stomach.

Incipient pulmonary tuberculosis and malig-

## MALIGNANCY AND TUBERCULOSIS—PETTER AND FENGER

nant neoplasm were found in only five patients, aged thirty-six to fifty-seven, averaging forty-eight (Table IV). The gastro-intestinal tract was involved by the malignant tumor in four of these five while a bronchogenic carcinoma existed in the fifth. This latter case had been diagnosed as tuberculosis on the history and x-ray

the symphysis and extensive abscess and fistula formation over perineum and buttocks, was originally treated for these lesions. Two years following his discharge he returned after a catheter had been inadvertently pushed through his prostatic urethra, into the rectum. At this time a carcinoma of the prostate and rectum was found.

TABLE V. THREE CASES OF OSSEOUS TUBERCULOSIS WITH MALIGNANCY

Case	Sex	Age	Tuberculosis	Malignancy	Metastases
1292	M	64	Costochondral	Basal cell carcinoma of face	
1364	M	35	Symphysis pubis	Carcinoma of prostate and rectum	
5122	F	44	7th & 8th dorsal vertebrae	Carcinoma of breast	Nodes

TABLE VI. SEVENTEEN CASES OF MALIGNANCY ADMITTED WITH DIAGNOSIS OF TUBERCULOSIS

Case	Sex	Age	Malignant Lesion	Metastases
370	M	39	Sarcoma of mediastinal lymph nodes	
1596	F	32	Carcinoma of peritoneum	Lung
2218	M	26	Carcinoma of testis	
2255	M	44	Carcinoma of lung	
2408	M	49	Adenocarcinoma, primary undetermined	Lung, axillary nodes
2428	F	37	Squame cell carcinoma of larynx	Cervical nodes
3070	M	52	Sarcoma 9th dorsal vertebra	Ilium
3249	M	64	Carcinoma of esophagus	Lung, liver, nodes
4285	M	48	Teratoma testis	Lung
4695	F	39	Carcinoma of breast	Pleura
5030	F	50	Melanoma of heel	
5357	F	46	Hemangioendothelioma; of spine, ribs, femur	
5362	F	54	Carcinoma of cervix	Lung, rib
5368	F	55	Carcinoma of lung	
5378	M	60	Bronchogenic carcinoma	
5622	F	17	Embryonic neuroganglioma of dorsal sympathetics, with erosion of 10th dorsal vertebra and 9th and 10th ribs	
6124	M	45	Bronchogenic carcinoma	Skin

appearance of the chest. On further study in the sanatorium, the x-ray picture was considered to be that of a malignancy rather than tuberculous infiltration. However the sputum was persistently negative on smear, and only repeated positive guinea pigs established the diagnosis of concomitant tuberculosis.

Three patients (Table V) presented the combination of bone tuberculosis and malignancy of other structures. Here again the males predominated and the ages ranged from thirty-five to sixty-four years, averaging forty-eight. One of these patients, a negro, with tuberculosis of

The other cases were carcinoma of the breast and tuberculosis of the vertebrae, and a costochondral tuberculosis combined with epithelioma of the skin of the cheek.

Probably the most interesting group is that composed of the seventeen patients referred to the sanatorium as tuberculous, in whom we could demonstrate only malignant neoplasm (Table VI). This group presented primary pulmonary malignancy in five cases and pulmonary metastases from some other primary tumor in five other instances, thus accounting for more than half the cases. Three other patients were ad-

## MALIGNANCY AND TUBERCULOSIS—PETTER AND FENGER

mitted to the orthopedic service with diagnoses of tuberculosis of the spine, but which on further study were found to have the following malignant diseases:

1. Sarcoma of ninth dorsal vertebra.
2. Hemangioendothelioma involving several vertebrae, ribs, and femur.

Carcinoma of the testis mistaken for tuberculous epididymitis, a malignant melanoma of the heel previously diagnosed tuberculosis, and a sarcoma of the mediastinal lymph nodes constitute the balance of this group.

Of these seventeen patients nine were males and eight females, while the average age was

TABLE VII

Location of Malignancy	No TBC.	F.A. TBC.	M.A. TBC.	INC. TBC.	Bone TBC.	Metastases				
						No TBC.	F.A. TBC.	M.A. TBC.	INC. TBC	Bone TBC.
Skin	9	1	5	2						
Lung	8	5	1	1						
Breast	7	1	3	2						
Stomach	7		3	2	2					
Sigmoid	3		1	1	1					
Testis	2	2								
Penis	2		2							
Prostate	2			1						
Vertebra	2	2								
Esophagus	2	1		1						
Asc. Colon	2		1			1				
Peritoneum	1	1								
Larynx	1	1								
Mediastinal										
Nodes	1	1								
Cervix	1	1								
Sympathetic										
Ganglion	1	1								
Eye Ball	1		1							
Antrum	1		1							
Cerebrum	1		1							
Kidney	1		1							
Tongue	1		1							
Maxilla	1			1						
Pancreas	1		1							
Multiple										
Myeloma	1		1							
	59	17	23	11	5	3	Total 8 21	6	3	3
										1

3. An embryonic neuroganglioma of the dorsal sympathetics, causing pressure erosion of the ninth and tenth dorsal vertebrae and the adjacent ribs on the left side.

One patient in the group having a squamous cell carcinoma of the larynx was sent to us with a diagnosis of tuberculous laryngitis and complicating cervical node involvement.

forty-five, the range being seventeen to sixty years.

Malignant neoplasm must always be considered in the differential diagnosis of tuberculosis. When considering pulmonary lesions one should remember that malignancy here is apparently on the increase and in patients of middle age or beyond presenting the symptoms of cough, expectoration, hemoptysis and rapid decline, malig-

nancy should be considered in preference to pulmonary tuberculosis. There are no symptoms or physical findings pathognomonic for bronchopulmonary malignancy. The symptoms may simulate upper respiratory infection, may be only a lingering cough, while there may be blood streaked sputum or frank hemoptysis. Tempor-

### Summary

1. Fifty-nine cases of malignant neoplasm occurring in 5,905 admissions to Glen Lake Sanatorium are shown in order of their frequency

2. Seventeen of the fifty-nine patients presented malignancy which had been diagnosed as tuberculosis.

TABLE VIII

	Male	Female	Age Range	Average	Metastases
Malignancy only	9	8	17-60	44.5	8
F. A. pulmonary tuberculosis with malignancy	15	8	25-72	50.2	6
M. A. pulmonary tuberculosis with malignancy	8	3	47-70	57.6	3
Inc. pulmonary tuberculosis with malignancy	3	2	36-57	48.	3
Bone tuberculosis with malignancy	2	1	35-64	47.6	1
59 Cases	Totals	37	22	17-72	49.6
					21

rary bronchial stenosis may produce acute findings suggestive of lobar pneumonia. Pain in the chest, increasing in severity is often an early sign.

X-ray examination of the chest and bronchoscopic examination are of extreme value. Metastatic tumors of the lung can rarely be diagnosed without x-ray of the chest. Bronson summarizes the diagnosis of pulmonary malignancy as follows: "Recurrent cough and blood streaked sputum negative for tubercle bacilli; x-ray not characteristic of tuberculosis should arouse suspicion of malignancy."

One of us, in lectures on extra pulmonary tuberculosis given to medical students, has always stressed the importance of considering malignant tumors, both primary and secondary, in the differential diagnosis of tuberculosis of bones and joints, lymph nodes and skin especially. The three orthopedic cases just cited, with the bronchogenic carcinoma metastasizing to a vertebra in the advanced pulmonary group, and the carcinomatous larynx and the sarcomatous mediastinal nodes, encountered in our series serve to emphasize this teaching point.

Smear examination of sputum and exudates should always be checked by guinea pig inoculation, for experience has shown that tubercle bacilli are notoriously hard to find in coexistent cancer and tuberculosis by smear alone. Biopsy of accessible tissues should be done whenever possible for this procedure may at times be the key to a diagnosis.

3. In this latter group, primary and metastatic pulmonary tumors occurred in 60 per cent and bone tumors in 18 per cent.

4. The average age of these patients was at the upper end of the age range for tuberculosis and at the beginning of the cancer age.

5. Coexistence of cancer and tuberculosis occurred before thirty-five years of age in 12 per cent and before thirty in 2.4 per cent.

6. In the face of a lingering cough, hemoptysis and negative sputum, with an x-ray picture of the chest not characteristic of tuberculosis, pulmonary malignancy should be strongly suspected, especially in a person past middle age.

7. Primary and metastatic tumors must always be considered in the differential diagnosis of extra pulmonary tuberculosis.

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## THE NAME OF THE DOCTOR\*

ARTHUR N. COLLINS, A.B., M.D., F.A.C.S.

*Duluth, Minnesota*

IT IS with deep gratitude that I appear before you on this occasion to acknowledge the high honor conferred upon me when you elected me your president. In taking my place in the list of honored physicians who have led the way for me as presiding officers in this vigorous organization, I cannot but feel a keen sense of pride and a feeling of warm friendship for all its members. It is my hope that the Northern Minnesota Medical Association will grow larger and broader each year; larger in the sense of increasing yearly attendance and broader, in that each member will come to know his practising confrères better and to find himself in greater sympathy with them. It is this last sentiment which furnishes the keynote for my remarks.

In this day, it is no small blessing that we belong to a profession of such vast accomplishments and far-reaching beneficence. Were we responsible for all this ourselves there might be just cause for exultation. But it is an inheritance for the greater part. Most of the glory belongs to our predecessors. Our traditions have been woven from the finest fibre found in our professional forefathers. Medicine today is the product of the past and the foundation of the future.

In the past, medicine was an infinitude of dogma and opinion. In the present it is beset by incursions of economic difficulties in bringing the best of present day scientific medicine to all classes of our people. In the future, medicine will be more and more scientific, but how much of the old will suffer disproof and be sloughed off from the curriculum of the past and of the present, remains to be seen. Certain it is however that the high ideals which sprung from the fine characters of our predecessors will endure through the generations of physicians who will follow us. Atavism, or reversion to a former type, will indeed be far removed from a profession which has shown itself to be so virile and forward-looking as the medical profession.

*Progress* in healing the sick is our tradition. This great tradition, our dearest possession, is

like a mighty tree grown straight. The younger generation is reared beneath it, the mature thrive in its environs and the old die with its stalwart form still in full view.

Every thinking physician realizes before he has practised many years that this inheritance has come to him through no virtue of his own and he may feel his unworthiness in having it thrust upon him. But he is powerless to ward it off and must accept it. It was created for him by those who preceded him and it was presented to him by an invisible hand at the time he received his diploma. Progress must be his watchword.

Volumes have been written on the good deeds of the doctor. He hears it at banquets and in the church. He is reminded often that he has adopted an honorable profession. He begins to feel pride in it and he tries to merit it.

Listen to Robert Louis Stevenson's "Eulogy of the Doctor."

"There are men and classes of men that stand above the common herd, the soldier, the sailor, the shepherd not infrequently, the artist rarely, rarer still the clergyman, the physician almost as a rule. He is the flower of our civilization and when that stage of man is done with, only to be marvelled at in history he will be thought to have shared but little in the defects of the period and to have most notably exhibited the virtues of the race. Generosity he has, such as is possible only to those who practice an art and never to those who drive a trade: discretion tested by a hundred secrets; tact, tried in a thousand embarrassments; and what are more important, Herculean cheerfulness and courage. So it is that, he brings air and cheer into the sick room and often enough, though not so often as he desires, brings healing."

The name of the doctor is buoyed up and sustained by public opinion. He can maintain it thus if he is faithful to his trust. His sincerity is his safeguard. He can make mistakes, as all men do, and be forgiven. He is human and all his neighbors allow for that. He has his faults as all have but these are overlooked by a generous public. Surely no man could start his career with the cards more in his favor, for the doctor has a good name.

But how about his regard for his fellow prac-

\*Presidential Address before the Northern Minnesota Medical Association, Fergus Falls, Minnesota, September 1, 1936.

## THE NAME OF THE DOCTOR—COLLINS

titioners? Does he admit they have ability equal to his own or will he say that competition is keen and that reputations must suffer? Will he be tolerant of professional mistakes he might discover in others? Or will he call attention to such mistakes? Does he think because Doctor Newman comes to practice in Pleasantville after Doctor Olderman that he is the better physician? Was Tennyson, because he came after Shelly therefore the greater poet?

Let us see, with a concrete situation at hand, what may befall a doctor. He finds himself at the crossroads. Which way shall he take? No power on earth could make him accuse a legitimate **confrère**, the maker of a mistake, as being a quack, a crook, a criminal or a scoundrel! But he might just suggest, partly to show his superior knowledge, partly from his position of security, that there was a mistake made. It is often difficult to decide at the crossroads. A malpractice suit might result from his words or from his attitude. If he could only remember at such a time what was said about doctors at the banquet and the pride he felt at that time. Was it meant for him only or for other doctors too, including the one who made the mistake?

While he is choosing his course in this critical moment let us see what experience has taught in such matters.

If a malpractice suit is started he will no doubt be called upon to testify and if he "downs a competitor" in this way he may have a temporary exaltation. But how can this endure in a man who has felt pride at the banquet-talk about doctors? Are his professional friends beginning to distrust him or is this merely his imagination? Was that remark he may have overheard indicative of distrust on the part of his patient? It might be imagination. But is the type of his work deteriorating? Doesn't he tend to work alone? Doesn't he know of another doctor in the same situation who became a "down and outer," an abortionist and a dealer in narcotics? The *name* of the doctor is what matters.

He has been watching the doctor who made the mistake. Both went to the same medical school and received the same teaching. They are not friends now. That mistake and the lawsuit have fostered an inferiority complex in the "doctor of the mistake." He feels his **confrères** regard his work as of poor quality. He may feel they believe him guilty of wrongdoing.

The situation is so changed! He was once so cheerful and on such good terms with his fellow practitioners! Now he wonders whether the worry of medical practice is worth while. Unless helped and cheered by his **confrères** he may develop a mild form of melancholia reflecting detriment not only upon himself but upon his family and his entire professional following.

Each of the physicians in an episode of this character can with justification devoutly wish such a nightmare obliterated from the minds of all men including himself. It is not merely the name of doctor A or of doctor B which matters so much but the name of the doctor in a larger sense, that name which belongs to all of us which suffers; doctors warring against each other in the courts and before the public eye!

It would be in keeping with good sense to remind ourselves from time to time that whereas we rejoice in our ability to bring comfort and healing into the lives of our patients, we have also a solemn civil responsibility to them and to the public and it behoves us to review for our own good this civil responsibility in some of its tenets which directly concern us.

Every physician should possess in his library and keep ready to hand a volume on this subject. He should read it from time to time and thoroughly digest its teachings. His civil responsibility in the conduct of his practice is indeed no minor matter.

Here are a few important phrases concerning the civil responsibility of the physician taken from a competent authority (Mitchell of Massachusetts).

One who engages to undertake the performance of any duty, trust or employment agrees to do it with honesty, skill and assiduity.

Errors of omission are treated with greater leniency by the courts than errors of commission.

Physicians and surgeons must use ordinary care regardless of whether they were compensated or not. The law in this country does not distinguish between physicians and surgeons.

Where the patient does not coöperate with his physician, thereby injuring himself by his own wilful or negligent conduct, he cannot hold the practitioner responsible for the results to which he contributed and it makes no difference whether or not the patient was prevented from following the physician's directions because of his condition.

## THE NAME OF THE DOCTOR—COLLINS

The burden of showing a want of the necessary skill must be proved at the trial by the patient in order to secure judgment against the physician. On the other hand the burden of proving contributory negligence is on the defendant.

The law says that where a person knows the dangers incidental to certain undertakings, he is by law deemed to have assumed the risk and consequently cannot complain if injury results. From this it would seem that a physician and surgeon can forestall malpractice suits against himself by warning the patient of unpleasant possibilities and expressly stipulating with him that in such a contingency he shall not be answerable. It is always best to tell the patient that a perfect result is by no means certain.

It is well to emphasize the matter of care and skill; an erroneous diagnosis does not necessarily give a right of action to the injured party, but must have been the result of negligence or a want of skill on the part of the physician, through a wrong diagnosis followed by improper treatment is good ground for an action for malpractice.

The performance of a surgical operation on a patient whose consent has not been obtained will render the operator liable for damages to that person. The patient must be the final arbiter as to whether he shall take his chances with the operation, or take his chances living without it. Such is the natural right of the individual, which the law recognizes as a legal one. Consent, therefore, of an individual, must be either expressly or impliedly given before a surgeon has the right to operate.

During an operation already authorized, new conditions may be discovered or may develop in the most unexpected manner and in such emergency-cases the physician will be justified in performing an operation without any consent, if the operation is necessary and expedient. The

burden of proving that the operation was not justified by consent of the proper person rests upon the plaintiff.

The law will presume, until contrary proof has been adduced by the patient, that care and skill were used by the physician in his treatment and the burden of proof is upon the plaintiff to show that the physician was negligent or unskillful.

All our experiences are made up of two elements: first the outward circumstance and second the inward interpretation. Are we at all times competent to sit in judgment on the motives of our brother practitioners? Tolerance is born in some men, absent in others and is difficult to cultivate by many. We should guard against self-complacency. We should seek new values in tolerance and coöperation. We are unselfish so far as our general group is concerned. The next step is to apply this quality individually and to stand up for our brother physician. We may not have fallen below the standards of our predecessors, but is it clear that we are above them in clarity of vision and bigness of purpose? Humanity has been on this planet many thousands of years. Our brain is apparently as large as that of the man of the ice ages. Is our soul no greater?

The doctor, if he prays at all, let him say: make me a competent guardian of the health of my patients and make me charitable toward any shortcomings of my fellow practitioner even as he is charitable toward me and should he stumble and fall give me wisdom and courage to lend him a helping hand.

Then as we carry on in our work from day to day let us remember these sturdy lines from Robert Burns:

For a' that and a' that  
Their dignities, and a' that  
The pith o' sense and pride o' worth  
Are higher rank than a' that.

## THYROIDITIS\*

MARTIN NORDLAND, M.D.  
Minneapolis

THE inflammatory reactions in the thyroid gland occur more frequently than is supposed. These inflammations vary according to their association with or independence of any goiterous process, and in the common classifications are divided into those which suppurate and those which do not. The non-suppurative type usually attacks the comparatively healthy gland and is often designated as "simple thyroiditis" while the type with a tendency to form pus usually occurs in goiterous nodules and is called "acute suppurative thyroiditis." Clinically these types can usually be differentiated and recognized by their general symptoms without the aid of the laboratory. In the subacute or chronic type of thyroiditis the diagnosis cannot be made without a microscopic examination. In this latter group come the rather rare fibrotic types of thyroiditis, the diffuse, referred to as "Riedel's struma," and the more localized type of Hashimoto.

The significance of inflammatory processes in the thyroid can best be emphasized by presentation of some typical cases and a discussion of some of the problems in diagnosis.

### Acute Non-Suppurative Thyroiditis

The following case will illustrate the rather common type of acute non-suppurative or simple thyroiditis.

A physician, thirty-six years of age, had had a severe attack of laryngitis. This had begun to quiet down when tenderness and swelling was noted in the region of the thyroid gland. Within two weeks pain developed on swallowing solid food. The tenderness which started in the right lobe of the thyroid gland gradually spread to the left lobe as it disappeared from the first side. During this time the temperature varied from 99° to 100°. On examination the thyroid gland was found symmetrically enlarged. It was firm and definitely tender. There were no marked pulsations of the vessels and the gland was not adherent to the muscles. The basal metabolic rate was plus 15 per cent at the height of the symptoms and minus 17 per cent about one month later.

This rather common disorder of the thyroid may be caused by any infection, either within

the thyroid or secondary to some infection from without. When following some generalized or local infection, it is rather easily recognized. When it occurs within the gland, it is not so easily diagnosed. Generally it is benign and rarely recurs, but when it follows an infection such as scarlet fever, typhoid or influenza, it is more serious.

The treatment consists of rest in bed during the height of the infection together with the application of an ice collar and the administration of analgesics. When toxic symptoms are present, Lugol's solution should be administered. The disorder usually lasts from three to six weeks.

### Acute Suppurative Thyroiditis

This type may occur late in the group classified as non-suppurative, primarily in the gland or complicating some adjacent inflammatory process, or secondary to a generalized infection. Primary suppuration in the gland is quite rare. The two following cases are of interest (1) to illustrate the problem in diagnosis and (2) to reveal the occasional severity and violence of the process.

A woman, forty-six years of age, came with the typical symptoms of acute thyroiditis. The symptoms, however, persisted beyond the normal time and the local pain and difficulty in swallowing increased. The basal metabolic rate was plus 16 per cent. A swelling gradually developed in the left lobe and pain was present over the entire gland. On palpation, the entire gland could be made out and the mass had a firm feel as in acute thyroiditis. Evidence of suppuration soon developed in the left lobe and an incision was made similar to that for thyroidectomy. About an ounce of pus was evacuated from the lower pole of the left side, drains were inserted and within two weeks the wound was healed. Dysphagia continued and difficulty in breathing developed. The patient had lost considerable weight and, because of the persistent difficulty in swallowing, an esophagoscopy was performed. A lesion the size of a hazelnut was found in the esophagus just behind the thyroid (Fig. 1). Section of a portion removed showed a squamous cell carcinoma (Fig. 2). A gastrostomy was performed and the patient was fed through a Witzel tube. The patient did not improve and died after six weeks. Postmortem examination revealed a primary carcinoma in the esophagus with

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## THYROIDITIS—NORDLAND

invasion of the trachea and the thyroid, with a secondary *suppurative thyroiditis* (Fig. 3).

\* \* \*

The second case is that of a man forty-two years of age who had had a large goiter for many years. Two

and the wound was firmly packed. On the fourth day on removing the pack, the hemorrhage recurred and the wound was again packed. After a few days the packing was gradually removed and the patient made a rapid recovery. One year after the operation, the

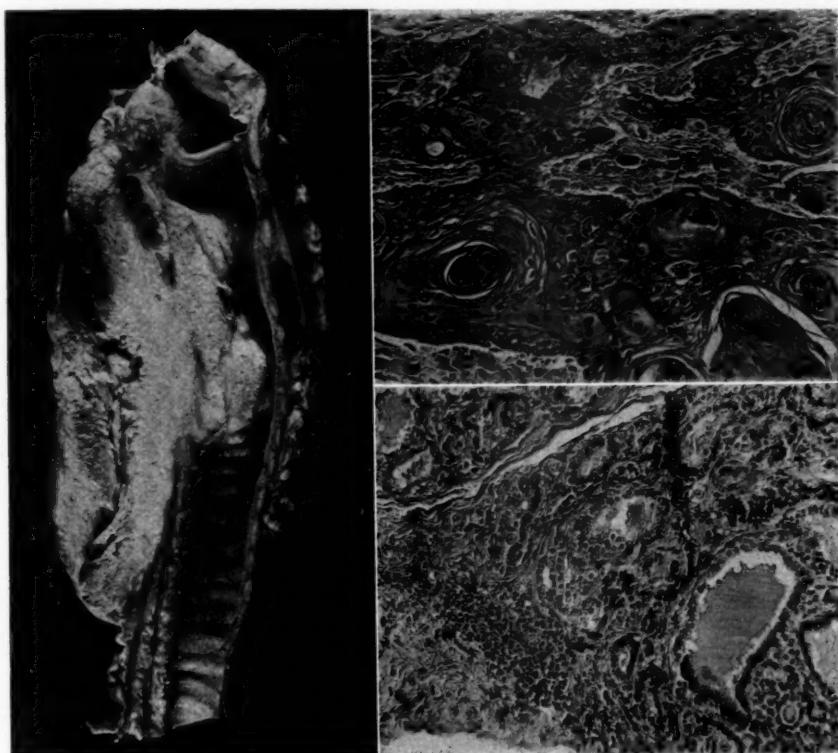


Fig. 1. (left) Gross specimen of carcinoma of the esophagus invading the thyroid with secondary acute suppurative thyroiditis.

Fig. 2. (upper right) High power squamous cell of the thyroid extending from primary carcinoma of the esophagus.

Fig. 3. (lower right) Low power squamous cell carcinoma of the thyroid complicated by acute suppurative thyroiditis.

weeks after a mild bronchitis he suddenly developed severe chills, fever which ranged from 101° to 103°, and extreme difficulty in swallowing. This was followed rapidly by spells of suffocation. All the symptoms increased rapidly and at the end of the third day choking became alarming. On examination the patient appeared septic, with a distinct enlargement of the thyroid in general but with a more conspicuous change on the right side. Palpation caused such severe pain that the examination was difficult. The gland seemed to be adherent to the overlying structures and was very tense (Fig. 4). At operation an incision was made as if an ordinary thyroidectomy. Lateral retraction of the prethyroid muscles was done and a large abscess cavity in the thyroid was opened. The cavity measured about four inches in depth and considerable quantity of pus was evacuated. There was very free bleeding

basal metabolic rate was minus 9 per cent and he has remained in good condition (Fig. 5).

In this type of thyroiditis again, the origin of the infection may be within the gland itself or secondary to infection from the outside. As illustrated in this case, the onset of suppurative thyroiditis is marked by violent symptoms of a serious nature. There was a history of a preceding infection of the respiratory tract and the secondary infection of the thyroid was ushered in with chills, fever and local tenderness together with difficulty in swallowing as the process progressed. Lahey has suggested that a diagnosis may be made in this type of case by making the

## THYROIDITIS—NORDLAND

patient bend his chin toward the chest. In suppurative thyroiditis, breathing is thus made easy because of the relaxation of the pressure from the prethyroid muscles. If the abscess is not

thick-walled cyst, and the absence of temperature, would assist in the differential diagnosis (Fig. 6). Infection of the thyroid gland secondary to adjacent malignancy, as illustrated in



Fig. 4. (left) Acute suppurative thyroiditis.  
Fig. 5. (right) Complete absence of local evidence of thyroid substance, one year after acute suppurative thyroiditis.

recognized and the patient is not operated upon early, the pus may rupture through the surface onto the neck, into the esophagus or trachea, or into the mediastinal space. If rupture occurred into the trachea or mediastinal space, a fatal result would occur. Without early incision, edema of the larynx would also be a very probable complication.

The treatment is always surgical and a wide incision should be made with thorough drainage. The incision should be made *transversely* as in thyroidectomy (never vertically) and the prethyroid muscles should be retracted laterally. Good exposure is important and the muscles should be cut if necessary to expose multiple abscesses. The outlook is usually good when the infection is primary in the gland or following a simple infection as in this case. The outlook is usually poor when the suppuration in the thyroid is secondary to a generalized infection.

The type of infection illustrated by this case may be confused with a hemorrhage into an old thick-walled cyst of the thyroid. In the latter case a good history, which reveals a sudden increase in size within a few hours after exertion, an x-ray examination which demonstrates the

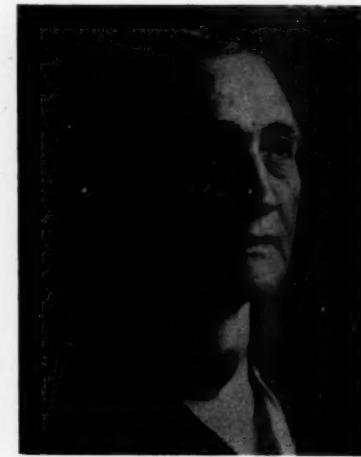


Fig. 6. Acute hemorrhage into old thick-walled cyst of the thyroid.

the first case, is a very difficult condition to diagnose preoperatively.

### Tuberculous Thyroiditis

Some cases of persistent non-suppurating thyroiditis are tuberculous in character. Tuberculosis of the thyroid is rare and is usually associated with a generalized tuberculosis. Routine histological examination of all goiters removed would often reveal, as in our case (Fig. 7), localized and circumscribed tuberculous lesions in goiters which give no indication of their presence. According to de Quervain, chronic suppurating thyroiditis, whether starting in a healthy or a diseased gland, is nearly always tuberculous. The presence of a persistent drainage from an inflamed area is often due to calcareous deposits in the suppurating nodule. In these cases an esophageal fistula should also be borne in mind.

### Chronic Thyroiditis

Chronic thyroiditis occurs with relative infrequency and is usually dependent upon a microscopic examination for diagnosis. When the secretory structure of the thyroid is diffusely re-

## THYROIDITIS—NORDLAND

placed by connective tissue, marked changes in metabolism occur and the gland assumes a peculiar hardness. This condition, first described by Riedel in 1896 and known as Riedel's struma,

a slight anteroposterior flattening of the trachea, the roentgenogram was negative. A tentative diagnosis of carcinoma of the thyroid was made and on August 28, 1930, an operation was performed, at which time the entire thyroid gland including the posterior capsule



Fig. 7. (left) Tuberculosis of the thyroid. Note the small amount of colloid substance within the tubercle.

Fig. 8. (center) Gross specimen, woody thyroiditis. Sections from all portions of the specimen show no normal tissue.

Fig. 9. (right) High power woody thyroiditis, showing extensive invasion with fibrous tissue.

is of interest because of its rarity and of importance because when seen is frequently confused with malignancy.

Such a case, a widow of fifty-seven, was seen first in August, 1930. Her symptoms consisted of progressive weakness which had been noticed for the past five years, but most marked for a few months preceding the examination. She became so exhausted that ordinary conversation tired her. For more than a year she had lost weight from 198 to 158 pounds. Her face had become puffy and an increasing pallor had become conspicuous. She noticed numbness in the hands and feet, had considerable headache and dyspnea, and gradually developed a sensation of pressure in her throat. A persistent aggravating cough had been present for more than five years. Eight years before the examination she had been observed for tuberculosis for nearly one year. She had been aware of the presence of a "goiter" for more than twenty years.

On physical examination, the patient attracted attention because of a peculiar pallor and because of a very dry skin. Looseness of the skin of the extremities gave evidence of a marked loss of weight. Her speech was slow and deliberate and she exhibited extreme exhaustion. Her pulse was 82, blood pressure 146/86. Otherwise the general physical examination was negative. The throat revealed on inspection an irregular mass in the region of the thyroid, the general outline of which corresponded to that of the normal gland. On palpation, the irregular mass was found to be slightly nodular and unusually firm. The lobes could not be demarcated. Manipulation of any portion caused movement of the entire mass and brought on severe spasms of coughing. She had no fever. The basal metabolic rate was minus 26 per cent and, except for

was removed (Fig. 8). Obliteration of the vessels as is usually found in malignancy of the thyroid was not present. The patient made a rather rapid recovery. There was no injury to the recurrent laryngeal nerves and the parathyroids were apparently preserved. This extensive operation was done because of the preoperative diagnosis of carcinoma.

Pathologic examination of the specimen by Dr. E. T. Bell excluded carcinoma. No active secretory tissue was found in the entire specimen, and while tuberculosis was suspected, no evidence of this was found. The final microscopic examination disclosed a "woody thyroiditis," an advanced chronic thyroiditis (Fig. 9).

The patient has taken thyroid extracts continuously since the operation, varying from 1 to 5 grains of desiccated gland daily. She has been in good health. The basal metabolic rate has varied from minus 3 per cent to plus 17 per cent with repeated observations.

The onset of chronic thyroiditis is slow and the time of its first appearance is not definite. Difficulty in swallowing is a common symptom. An uncomfortable sense of fullness, increasing at times to tenderness, is frequently present. A general weakness, increasing to the point where the patient prefers to lie in bed, is common. As in this case, talking often tires the patient and dyspnea increases to the point where operative relief is sought. A low-grade temperature is occasionally present. When the preoperative diagnosis is made, the treatment consists only in the operative relief of the dyspnea by resection of the isthmus to free the trachea.

Riedel's struma is perhaps as frequently mistaken for carcinoma of the thyroid as any thyroid swelling. It is usually necessary to depend on the microscopic sections for the final diag-

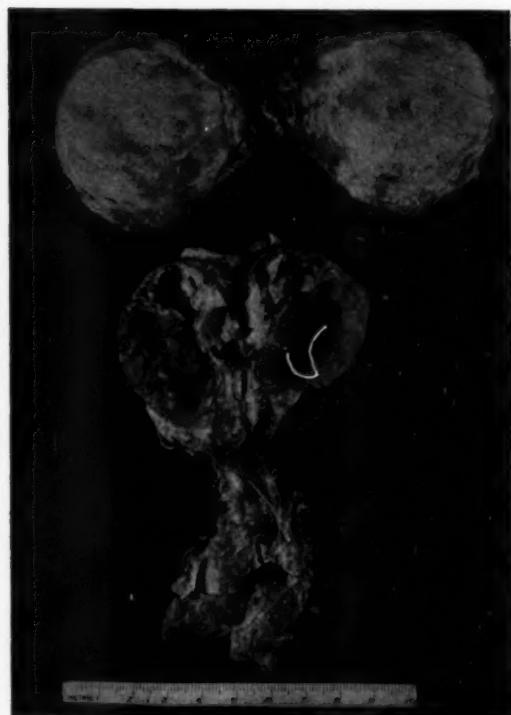


Fig. 10. Sarcoma of the thyroid, limited to the right lobe.

nosis. Riedel's struma, however, usually presents a symmetrical enlargement, is diffusely and bilaterally hard, retaining the shape of the normal gland. There is no fixation to the other tissues in the neck and huskiness of the voice is absent. The clinical differentiation of Riedel's struma from a malignant adenoma is always difficult. It is impossible to distinguish between the two when the inflammatory process is localized in one area of the gland, and when the malignancy is present in the early stages. Not infrequently the final differentiation of this tissue is made only by the histological study of the sections. In general, Riedel's struma is diffusely and bilaterally of stony hardness and the enlargement is

usually symmetrical, while malignancy is usually nodular and conspicuous in one lobe (Fig. 10). Nodules are seldom present, fixation of the tissues of the neck is rarely noticed and paralysis of the recurrent laryngeal nerve does not occur. The classical symptoms of carcinoma of the thyroid, such as hoarseness, stridor, choking, etc., which are dependent upon the invasion of the larynx, laryngeal nerves, trachea and esophagus, are usually those of the end stages. When these symptoms are present, the diagnosis of malignancy is not so difficult. It is in the early stages of malignancy that the differentiation from chronic thyroiditis is the most difficult.

The treatment of Riedel's struma, as previously stated, is primarily surgical, first, for *diagnosis* (mainly to *exclude* carcinoma) and, second, to *relieve pressure*.

### Summary

Thyroiditis, while relatively common, is frequently not recognized. So often the basal metabolic rate serves as a criteria for the evaluation of all disturbances of the thyroid and the determining factors for operation on the gland, that the clinical features of this interesting group of cases are entirely lost sight of. The patient with Riedel's struma described in this paper was examined by physicians at various times and at one time the patient was referred for a special examination of her thyroid gland. Because, at the time of her examination, the basal metabolic rate was on the minus side, she was told that her thyroid disturbance was not significant. Thus a very rare and interesting case was overlooked. Had the diagnosis been made more on the physical findings, the patient would have been relieved earlier. Hyperthyroidism is only occasionally associated with the inflammatory processes of the thyroid gland, while hypothyroidism occurs frequently in association with and as a late sequence to these inflammations. The development of myxedema in later years would depend on the frequency and the degree of thyroiditis. Cases of idiopathic myxedema may have had an early thyroiditis. The significance of thyroiditis, therefore, cannot be overlooked.

## CHRONIC HYPERTHYROIDISM\*

### Nodular Goiter

THOMAS O. YOUNG, M.D. and CLEMENT I. KRANTZ, M.D.

Duluth, Minnesota

FOR a number of years past, we have been increasingly cognizant of the fact that a not inconsiderable group of definitely diseased and toxic thyroids were being quite generally overlooked. Our attention was further centered on this fact by a recent paper by Davison and Poer<sup>2</sup> at the Chicago Meeting of the American Association for the Study of Goiter. In their paper the condition which we are to discuss was touched upon and very aptly designated "Chronic Hyperthyroidism." Whether or not this terminology will continue to be applied to this condition depends largely on its acceptance by the profession. For the purpose of this paper we feel that it is satisfactory and conveys the impression of a clinical entity in definite contradistinction to the more acute and fulminating conditions.

In defining chronic hyperthyroidism as applied to nodular toxic goiter, it was necessary to draw a line somewhere that would include all cases which, due to possibility of error in metabolism estimation or any other reason, could be considered questionable. In other words, the basal rate was lower in certain cases than the symptoms and physical findings would indicate. We have recognized the fact that a certain group of normal individuals have a basal rate from ten to twenty-five points below the average normal. Plummer<sup>7</sup> states that in 20 per cent of apparently normal persons, the basal rate is not between + 10 and - 10, but between - 10, and - 20. If individuals with such low readings develop nodular toxic goiter with a small elevation in their basal rate, they still may fall below what we consider an average basal value.

For purposes of clarification we wish to show the classification of goiter which we are using as accepted by the American Association for the Study of Goiter.

While we are all familiar with the various forms of apparatus for the study and estimation of the basal metabolic rate, those of us who are particularly interested in thyroid work, recognize

the possibility of misinterpretation of true basal readings. For some time past, a high metabolic rate has been the deciding factor in advising operation. It is our contention that too much emphasis has been placed on the literal acceptance of this laboratory procedure. This has meant that certain patients have been needlessly operated upon, and that others, who would have been greatly benefited by operation, have not.

TABLE I. CLASSIFICATION OF GOITER

New	Old
Diffuse goiter	Simple colloid or adolescent goiter
Diffuse toxic goiter	Exophthalmic goiter, Basedow's disease, Graves' disease
Nodular goiter	Adenomatous goiter
Nodular toxic goiter	Toxic adenomatous goiter

Too careful evaluation of the history and physical findings cannot be made. The metabolism test should be used, not as a basis for diagnosis, but as added evidence for or against hyperthyroidism. Careful technic in doing the metabolism test cannot be emphasized too much. The acceptance of hyperthyroidism *per se*, because of an elevated basal metabolic reading, may in many cases lead to an erroneous diagnosis. Full knowledge of the fact that such conditions as nephritis with hypertension, malignancy, asthma, polycythemia, pernicious anemia, the leukemias, and other conditions, may and do cause an elevation of the basal metabolism, must be accepted. Such an elevation, without goiter or clinical signs of hyperthyroidism should suggest to the clinician a repetition of the test, plus a careful clinical search for the other factors which might be responsible. Mayfield<sup>6</sup> reports that there are basal rates of + 20 to + 30, in cases which do not have hyperthyroidism. Conversely Gordon and Graham<sup>3</sup> state that they have long recognized that patients may suffer from hyperthyroidism without elevation in the basal metabolism. In this report only cases having a basal rate of + 20

\*Read before the Northern Minnesota Medical Association, Fergus Falls, Minnesota, August 31-September 1, 1936.

## CHRONIC HYPERTHYROIDISM—YOUNG AND KRANTZ

or below, have been considered, and it is in this group that the largest percentage of error exists. For purposes of this study, 450 consecutive cases of diseases of the thyroid operated by one of us have been reviewed, and questionnaires were

Some of the patients studied had sought relief elsewhere for some time. The presence of thyroid enlargement was recognized, yet the condition had not been considered toxic, and treatment had been confined to sedation and other

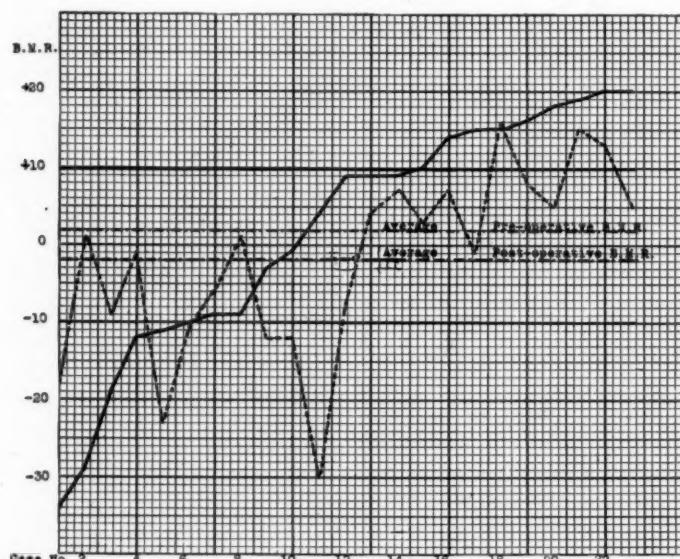


Chart 1. Comparison of preoperative and postoperative basal metabolic rates. Preoperative readings are shown by the continuous line; postoperative by the dotted line.

sent to each individual. Replies were received from 235. Of this number sixty-four cases or 27.2 per cent fell into the group with which we are concerned. Of these sixty-four cases, forty-one had to be left out of our statistical study largely because they had not as yet reported for a postoperative metabolism study, which left twenty-three cases or 9.7 per cent of the total to form the basis of our report.

In the 450 records of operative cases, we found chronic hyperthyroidism to divide itself into two distinct groups. The first group consists of cases of nodular toxic goiter of the chronic variety to which we will confine our discussion. The second group consists of those of diffuse toxic goiter of the chronic variety which will be the subject of a paper now in preparation. In our series of cases the diagnosis was made and the operation advised on the clinical findings alone. Lockwood<sup>4</sup> goes so far as to say that the policy in his clinic in Toronto during the past five years has been to operate all nodular goiters regardless of the basal metabolic rate.

measures as used in functional disorders. This definitely classifies this group as chronic.

This series of twenty-three cases was carefully studied from the standpoint of symptomatology, physical findings, and laboratory reports. In all cases the preoperative diagnoses were the same as the postoperative findings, and these were further substantiated by pathological section. There were twenty females and three males composing this group, whose average age was thirty-seven years. The youngest individual was fourteen, while the oldest had reached sixty-one years. The average blood pressure reading was 133/85, ranging from a low of 90/70 to a high of 178/80. The diastolic level showed a slight rise, as was to be expected. The average duration of goiter was 18.3 years, while symptoms had been present for one year and three months. It is of interest to note that we are dealing with a fairly young group, the average being thirty-seven years, in whom goiter had been present for a little over eighteen years. The pulse rate before operation was 87 and after

## CHRONIC HYPERTHYROIDISM—YOUNG AND KRANTZ

operation it had dropped to 79. Nervousness was complained of by twenty-three individuals before operation, while after operation this symptom had disappeared. In nineteen cases there was tremor prior to operation and in four

where the rate ranged below — 10, the average value before operation was — 19.2, while after surgery, it had risen to — 10.2, or an increase of 9 points. In Group II, which is considered

TABLE II. CHANGES IN SYMPTOMS AFTER OPERATION

Symptoms	Preoperative Cases	Postoperative Cases
Emotional instability	20	9
Nervousness	23	0
Tremor	19	4
Dyspnea	21	8
Palpitation of heart	4	1
Tachycardia	22	2
Loss of strength	16	0
Loss of weight	17	0

this symptom remained afterward. Emotional instability was present in twenty patients, and of these nine still complained of this to some degree. Cardiac palpitation was complained of by four individuals and this symptom disappeared entirely after operation. Tachycardia was a common complaint, being present in twenty-two cases, but only two noted this to any degree later. Dyspnea was present in twenty-one individuals and in eight it still persisted after operation. Strength was below par in sixteen, but in all it was regained after operation, while loss of weight was regained in the seventeen patients who had noted it. In the entire group of twenty-three, seventeen or 73.9 per cent, stated that they had been cured by the operation, and were now in normal health. In six, or 26.1 per cent, there had been improvement, but in no case did the operation fail to produce beneficial results.

In an effort to visualize what has happened to the basal metabolic rate, we have graphically represented the readings before and after operation in Chart I. This discloses the rather startling fact that the lowest rate was — 34. Yet in this individual, a girl of fourteen years, there were no symptoms of thyroid insufficiency. Davison and Poer<sup>2</sup> in their series, had one patient with a rate of — 37 which agrees well with our findings. After operation, the rates varied from — 30 to + 16. The mean value for the rate before operation was found to be + 2, while after operation, the value had dropped to — 1.6, a lowering of 3.6 points following thyroidectomy.

Rearranging these readings into groups, we find further interesting disclosures. In Group I,

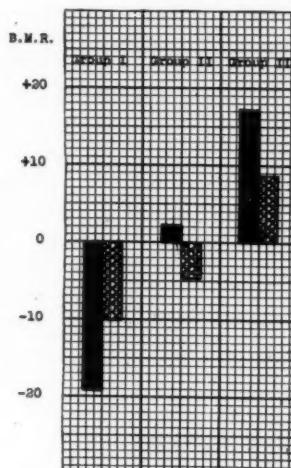


Chart 2. Comparison of basal metabolic rates before and after operation in different group levels. Group I, — 10 or below; Group II, — 10 to + 10; Group III, + 10 to + 20. Solid black area indicates rate before operation; cross-hatched area, after operation.

the normal range of metabolism, the preoperative mean was + 2.1, while it had fallen to — 4.8 after operation, a drop of 6.9 points. Group III consists of those whose basal metabolism readings ranged from + 10 to the upper limit of + 20. In this group we find the greatest probability of error. The preoperative reading was + 17.1, while it had dropped to + 8.3 in the postoperative state, a drop of 8.6 points. It will be seen that in the postoperative state the basal metabolism tends toward more normal levels. In Group I, there was a rise, while in Groups II and III there was a moderate drop.

To illustrate our findings in a more concrete manner, we have selected two representative cases and report them herewith in detail:

*Case 1.*—An unmarried female patient, aged thirty-five, complained of goiter which had been present for twenty years. During the last year there had been considerable increase in the size of the goiter, but without symptoms of pressure. She had lost five pounds in weight. She had noticed some increase in nervousness with a moderate amount of emotional instability. The past few months there had been definite tachycardia and dyspnea upon exertion. Her health otherwise was good.

Her past history was negative with the exception of

## CHRONIC HYPERTHYROIDISM—YOUNG AND KRANTZ

an appendectomy in 1928, from which she had an uneventful convalescence.

The physical examination showed a well developed apparently healthy young woman. The detail was negative, except for the thyroid. This was large, and nodular. It measured 4x3 inches on the right, and 3x2 inches on the left, and extended substernally on both sides. The pulse rate was 80 and the blood pressure reading 120/84.

The thyroid tissue removed weighed 90 grams. It contained numerous coarsely and irregularly lobulated nodules, and was congested throughout. There were several nodules containing recent hemorrhages. Microscopic examination showed the usual picture of follicles lined with flattened or cuboidal epithelial cells. There was also a moderate degree of lymphocytic infiltration.

Diagnosis: Nodular goiter in a diffuse goiter.

This patient states that she was entirely relieved by thyroidectomy with the exception of slight shortness of breath on severe exertion. The basal metabolism before operation was -9, while after operation it had risen to -6.

**Case 2.**—A male, aged sixty-one, complained of increased tolerance to cold, shortness of breath, loss of weight, and weakness. He had first noticed enlargement of the thyroid fifteen years ago. There had been a gradual progressive enlargement since, which was apparent only on the left side. Cold had always bothered him a good deal. During the last two years there had been a marked change. He required less clothing on his bed, and on his person in the coldest weather. Dyspnea dated back three years. Following a period of hard work, he felt badly, and was short of breath on slight exertion. A definite fine tremor of the hands and fingers developed which he attributed to hard work and to coffee, the latter being a great stimulant to him. He stopped drinking coffee, took a vacation, and was considerably improved. His weight had always been under par, his best being 150 pounds. At the time of the examination it was 127 pounds, there having been a five pound loss during the last two years. His strength had decreased during this period, and frequent examinations failed to disclose the reason for the trouble. The blood pressure was 150/70. Several metabolism determinations had been normal or sub-normal. His past history was negative except for migraine attacks, and pleurisy four years ago.

The physical examination was negative, except for the presence of a nodular goiter and a fine tremor of his hands. The blood pressure was 146/70 and the pulse rate 78 per minute. The thyroid was palpable on the left side. It measured 3x2 inches, and extended substernally. The right side was not enlarged.

A partial thyroidectomy was done. The specimen removed weighed 60 grams. The tissue was irregularly lobulated, and congested, containing adenomatous cysts. The cut surface showed the internal layer of a cyst lined with tough scar like connective tissue measuring up to 2 cm. in thickness. This was formed by atrophic

thyroid tissue which was very fibrous in places. Other areas showed alternating grayish fibrous and pinkish hemorrhagic areas. Between the nodules there was a small amount of irregularly lobulated, edematous, connective tissue. Microscopically these nodules were lined with low cuboidal or flattened epithelial cells. The stroma was scarred in some areas, while in others it was more abundantly edematous, and occasionally hyaline. There was infiltration with lime salts in other places. Extensive diffuse hemorrhages were present in the connective tissue stroma.

Diagnosis: Nodular goiter.

The patient states that following thyroidectomy he has been relieved of all symptoms. His preoperative basal metabolism rate was -29; it had risen to +1 after operation.

**Conclusion.**—We feel that the evidence herein presented justifies our contention that a careful study of all border-line cases of nodular goiter should be made; furthermore that the clinical findings are of paramount importance in deciding upon operation. The basal metabolism determination should be considered only as an adjunct to the clinical findings and should not be used as a determining factor in deciding upon operation.

### Summary

Twenty-three cases of chronic hyperthyroidism in nodular goiter have been studied with reference to symptoms, physical findings, and laboratory evidence. Removal of the goiter has resulted in clinical cures in 73.9 per cent, while 26.1 per cent were improved. The basal metabolic rate has tended to seek a more normal level after operation. There was no mortality in this series.

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## THE THERAPEUTIC USE OF CONVALESCENT SERUM IN MUMPS\*

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Clinical reports on the therapeutic use of convalescent serum in mumps are few in number, though, in the literature regarding its prophylactic use, there are references to the abortive nature of the cases that occur where prophylaxis is not successful. Metzulescu<sup>3,4</sup> reported favorably on its uncontrolled therapeutic use in eight cases of severe mumps complications. A report was made by Iverson<sup>2</sup> on its use in a series of fifty-six cases with a 20 per cent incidence of orchitis as compared to fifty-six cases untreated with a 29 per cent incidence of orchitis. Cambessedes<sup>1</sup> in a report touches upon this problem.

The following article presents some evidence regarding the therapeutic use of convalescent serum for mumps. In January, 1935, an epidemic broke out in an agricultural secondary school on the campus of the University of Minnesota. The health of this group is under the supervision of the Health Service of the University. Students attending the school come largely from rural homes. They live in dormitories, use a common dining hall, and by other more or less intimate contacts make conditions favorable for the spread of communicable disease. There were at the time, 330 students ranging in age from fourteen to twenty-five years with a mean age of eighteen years. The clinical picture of the mumps cases was extremely severe. Convalescent serum was used in twenty-three of the seventy-eight cases occurring during this epidemic. The clinical results were compared with those in fifty-five cases not receiving serum.

Prophylactic administration was not attempted because necessary amounts of serum were not available. Serum became available in small amounts during the latter part of the epidemic and was used in the treatment cited. Donors of the blood were convalescent patients who had in every instance been afebrile for at least eighteen days. The serum used was prepared by the bacteriology department of the university.

Blood taken from Wassermann negative donors was pooled and centrifuged and the serum filtered and "plated" for sterility. All cases, except for serum administration, were cared for in the same manner, i.e., absolute bed rest until the elapse of five afebrile days after the recession of parotid swelling or the clinical subsidence of complications and symptomatic treatment.

The evidence presented is limited by the small total number of cases treated and comparable. There were inadequate controls at the period of serum administration which was at the end of this epidemic so that changes of virulence may have played a part in the apparent results.

TABLE I. COMPARISON OF UNILATERAL AND BILATERAL CASES

Total Number	Unilateral No. % 39 50.0	Bilateral No. % 39 50.0
With Serum	14 6.09	9 39.1
Without Serum	25 45.5	30 54.5
Simple Cases	26 66.7	27 69.2
Complicated Cases	13 33.3	12 30.8
Without Serum after Mar. 1	1	3

Comparison of the serum treated cases with the cases not so treated, is illustrated by the tables. Table I shows the occurrence of unilateral and bilateral cases to be equal (thirty-nine of each) for the whole group but with a decided decrease of bilateral cases in those treated with serum. There were nine or 39.1+ per cent bilateral out of the twenty-three serum treated cases, and thirty or 54.5+ per cent bilateral out of fifty-five cases not specifically treated. During the period of serum administration, the few untreated cases (four) perhaps indicated the original tendency toward bilateral parotitis (three bilateral out of four untreated cases). The incidence of complications shows no direct relationship to bilateral or unilateral cases: there were thirteen of the unilateral and twelve of the bilateral cases complicated with the

\*From the Students' Health Service and the Department of Preventive Medicine and Public Health, University of Minnesota.

## CONVALESCENT SERUM IN MUMPS—HINCKLEY

same total number (thirty-nine) of cases in each group.

Table II shows that 32 per cent of the cases (seventy-eight) were clinically complicated by

febrile days. Differences of the mean numbers of febrile days and hospital days are apparently statistically significant.

Table IV illustrates the relatively great fre-

TABLE II. COMPARISON OF SIMPLE AND COMPLICATED CASES

Total Number	Simple		Complicated		P. E. Diff.	D. P. E. Diff.
	53=67.9%		25=32.1%			
With Serum	20=87.0%		3=13.0%			
Without Serum	33=60.0%		22=40.0%			
Average Number Hospital Days	10.66	± .219	13.80	± .413	.467	6.72
Average Number Febrile Days	4.37	± .195	7.84	± .330	.383	9.06
Average Peak Temperature	101.50	± .116	103.30	± .154	.193	9.07
Average White Blood Cells	6992		6408			

TABLE III. COMPARISON OF TREATED AND UNTREATED CASES

Total Number	With Convalescent Serum		Without Convalescent Serum		P. E. Diff.	D. P. E. Diff.
	23=29.5%	P. E.	55=70.5%	P. E.		
Average Number Hospital Days	10.17+	.307	12.24+	.280	.415	4.99
Average Number Febrile Days	4.26+	.297	6.00	.255	.391	4.45
Average Total Dosage Serum	17.96+ c.c.					

other than parotid gland involvement. There was apparently a decrease in the number and percentage of complications in favor of the serum treated cases (13 per cent complicated of twenty-three serum treated cases and 40 per cent complicated of fifty-five cases without serum). The uncomplicated cases ran a shorter and milder course than the complicated ones as indicated by the average hospital stay, average number of febrile days, and average peak temperatures for both groups. The average white blood cell counts upon admission were approximately equal for both groups.

Table III indicates that the serum treated cases ran a shorter and milder course than the untreated cases even though the average total dose of serum per patient was but 17.96 c.c. The serum treated cases showed an average hospital stay of 10.17 days, and an average number of 4.26 febrile days as compared to the untreated cases with an average hospital stay of 12.24 days, and an average number of 6.00

TABLE IV. INCIDENCE OF GLYCOSURIA

	Glyco- suria No.	%	No Glyco- suria No.	%	No Record No.	%
Simple	15	28.3	30	56.6	8	15.1
Compli- cated	10	40.0	12	48.0	3	12.0
Total	25	32.1	42	53.8	11	14.1
With Serum	14	60.9	7	30.4	2	8.7
Without Serum	11	20.0	35	63.6	9	16.4
Total	25	32.1	42	53.8	11	14.1

quency of glycosuria (32 per cent) for the group. It was more frequent in the complicated cases than in the simple cases (40 per cent and 28 per cent respectively). Glycosuria was apparently more frequent in the serum treated cases than in the untreated (61 per cent and 20

• HYPERINSULINISM—CARROLL

per cent respectively). The number of cases in each group is too small for statistical accuracy.

**Summary**

1. A small dose of convalescent serum administered intramuscularly in mumps cases as early as possible would seem to lessen the number of bilateral and complicated cases. Probably as a result of this and the subsequent milder course, the cases so treated required a shorter hospital stay.

2. Unexplained by the available evidence is the apparent but not necessarily true indication that glycosuria is more frequent in the serum treated cases than in those not so treated.

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**HYPERINSULINISM WITH RESECTION OF THE PANCREAS\***

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**H**YPERINSULINISM, like hyperthyroidism, at times produces symptoms referable to the various systems of the body, but unlike hyperthyroidism, hyperinsulinism may not have any demonstrable gross pathological changes in any organ to which we may attribute the symptoms. It has been only within recent years that our attention has been focused on this extremely interesting condition but the literature now contains voluminous reports and articles which lead us to infer that we have been overlooking these cases in the past.

Allan,<sup>1</sup> who has written extensively on this subject, is skeptical of the high incidence that some have reported. On the other hand, Harris states that hyperinsulinism is a frequent and widespread disease, numerous cases having been reported by careful observers in many countries.

The pathological basis for hypoglycemia due to hyperinsulinism was first reported by Wilder, Allan, Power and Robertson of the Mayo Clinic. In this case, Doctor W. J. Mayo found a carcinoma of the island tissue of the pancreas from which insulin was isolated. Then, from the metastatic carcinomatous nodules in the liver, insulin was also obtained. Again in the Mayo Clinic Bulletin of February 2, 1936, a similar case is reported.

Wilder has stated, "The situation is analogous to that of the early history of surgery in hyperthyroidism. The results in this new field ought

to be as good as those now obtained in hyperthyroidism by thyroidectomy, and I predict they will be." Finney and Finney<sup>2</sup> showed that removal of large portions of the pancreas are comparatively safe.

**Symptoms.**—These vary with the individual patient and may be produced in some who have higher sugar levels than one would expect should cause symptoms. Symptoms of hyperinsulinism do not occur at any definite blood sugar level in all cases. However, it seems to be agreed that if the fasting blood sugar falls below 70 mg. for each 100 c.c. of blood, symptoms may appear. In order to obtain a significant reading, the blood sugar determination must be made during the severity of the attack before time, medication or food have had an opportunity to affect the level. I feel that cases are undiagnosed because the blood cannot be obtained at the appropriate time or because a glucose tolerance determination is not made. Headache,<sup>3</sup> nervousness, tension, fatigue, body trembling, sleepiness may be found in the mild cases, while coarse tremors, blurred vision, unconsciousness, convulsions or amnesia are present in the more severe forms. Actual psychosis has been reported. Double vision, verbosity, and loss of orientation are noted in some after recovering consciousness. Abdominal pain has been noted by Graham,<sup>4</sup> especially in the left upper quadrant. The symptoms usually appear before meals or when one has been forced to omit a regular meal. Those with mild hypoglycemia may have an ulcer periodicity of symp-

\*From The Saint Paul Clinic, Saint Paul, Minnesota. Read before the Ramsey County Medical Society, Saint Paul, November 30, 1936.

## HYPERINSULINISM—CARROLL

toms, with food relief and the appearance of symptoms as the stomach becomes empty. In an individual with hyperinsulinism, the skipping of a meal or unusual physical exercise may initiate symptoms while a normal person can withstand excessive exercise or fasting without any noticeable effect. It has also been noted that during the premenstrual period symptoms of hypoglycemia are more often seen. Several deaths have occurred during coma as it is difficult to differentiate from other coma states unless a blood sugar determination is obtainable. Unconsciousness may last from a few minutes to several hours.

*Diagnosis.*<sup>5</sup>—The diagnosis is established by the following considerations:

1. Blood sugar determinations must be taken during an attack and these must be low.
2. Symptoms can be induced by fasting or vigorous physical exercise.
3. The symptoms can be relieved by taking sugar and, in the severe cases, glucose intravenously.
4. The glucose tolerance test practically always has a very low blood sugar level in the three hour specimen. This test, however, has not been as reliable as one might expect.

Allan<sup>1</sup> states: "The demonstration of hypoglycemia does not lead directly to the diagnosis of hyperinsulinism, for the blood sugar level is influenced by several factors in addition to the production of insulin by the pancreas. Disorders of other endocrine glands, particularly the pituitary and suprarenals; failure of the liver with respect to carbohydrate metabolism and certain diseases of the muscular system may also be responsible for depression of the blood sugar. If it is not accompanied by other signs to indicate the origin of the trouble, exact diagnosis is impossible. The tendency to apply the diagnosis of hyperinsulinism to any case where low blood sugar is found cannot be justified. In fact, definite diagnosis of hyperinsulinism cannot be made, in my opinion, unless surgical exploration or postmortem examination shows the presence of an islet tumor, or hyperplasia of the islet tissue of the pancreas. Until there are available methods of differentiating the origin of the changes in blood sugar, it seems preferable to stop with the diagnosis of hypoglycemia alone."

Cambridge reported 200 cases of chronic hypoglycemia and said that nearly all had some gastrointestinal symptoms which were relieved by dieting. Studies on marathon runners by Levine showed that physical exhaustion produces physiologic hypoglycemia.

*Treatment.*—Adrenalin, thyroid extract and pituitary extract have been advised but apparently are of little lasting value. A high protein or fat diet has been used lately and its advocates have felt that it produced better results than a high carbohydrate intake. The reason for this is that increasing the sugars in the diet causes a stimulation of the pancreas to produce more insulin and thereby establishes a vicious circle.

Dietary measures should be tried in all cases before more radical treatment is advised. Low carbohydrate diet, continued with high fat and frequent feedings seems to diminish excessive insulin production and to raise blood sugar levels. A number of these patients are overweight and in these cases, fats should also be reduced, and a low caloric diet, with frequent feedings, should be tried. Result of the diet may be tested by blood sugar determinations. It is difficult, as it is in diabetes, to make the patient realize the strict measures which are necessary, but in true hyperinsulinism indiscretions or deviations from the routine prescribed produce disastrous results which usually brings the patient to the realization that adherence to the strict routine is necessary. A good remedy for averting an impending attack is a cup of strong coffee or a hypo of caffeine. This stimulates the adrenals and temporarily raises the blood sugar. Continued use of strong caffeine drinks may later aggravate the symptoms. Phenobarbital is recommended as the best sedative to use in this condition. Adrenalin may restore consciousness in a few minutes, but its effects are only temporary. John reports using insulin in the treatment of hyperinsulinism, giving it after meals. It prevents the usual blood sugar rise and eliminates the stimulating of insulin production. Deep radiation has been used but its effect on the liver and stomach may be deleterious.

*Surgery.*—After definitely establishing the diagnosis of chronic hyperinsulinism and determining that the pituitary appears to be normal, operation may be advised. As many have previously pointed out, if it were possible to accu-

rately diagnose the presence of an islet tumor, then the medical treatment would be superfluous, and, in fact, contraindicated, as operation would offer the only relief. The tumors are supposed to cause more acute, severe and progressive symptoms than functional hyperinsulinism. Fortunate, indeed, are they who find an islet tumor in the pancreas which can be removed. In about one-half the cases which have been explored, these small islet tumors have been found. They are small, averaging about 1.5 cm. in diameter, and may be either single or multiple. This is an important fact to remember as search for additional tumors should always be made. They are most commonly found in the tail of the pancreas, where the Islands of Langerhans are most numerous. These small tumors are well encapsulated, reddish or purplish pink in color and stand out in contrast to the surrounding tissue. Careful inspection and palpation of both sides of the pancreas should be done and any suspicious deep area explored so as not to overlook these small neoplasms. In cases where careful search fails to reveal a tumor and the liver is apparently normal, one should then proceed with a partial resection of the pancreas, removing from two-thirds to three-quarters of the organ. There is nothing else left to offer these unfortunates, from a surgical standpoint.

Whipple and Franz,<sup>7</sup> in a very extensive review of the literature, added six cases of their own in which eight tumors were removed. In one of their cases, they reoperated on account of persisting symptoms and found and removed a second tumor. Their summary of the literature was as follows:

1. Cases with tumors found at operation.....	21
(1 carcinoma with metastasis)	
2. Cases found at autopsy.....	10
Total cases with tumors.....	31
Cases explored and no tumor found:	
Normal Pancreas .....	10
Pancreatitis .....	3
Hypoplasia (?) .....	1
Hypertrophy .....	1
Tumor at autopsy.....	1
Cases with autopsy no tumor found.....	3
All showed hypertrophy	—
Total cases without tumor.....	19
Cases with tumor without recorded hypoglycemia .....	31
Total cases with tumor.....	62

*Technic.*—Either a left rectus or a transverse incision is made. The gastrocolic omentum is divided between clamps, the stomach retracted

upwards and the colon downwards. With good exposure and blunt dissection, the entire pancreas is visualized. If an adenoma is present, it is easily shelled out and the cavity obliterated and the remaining portion of the gland searched for additional tumors. If no adenoma is present, the only other possible means of affording relief is by a removal of about two-thirds or three-quarters of the pancreas. Holman of San Francisco has advised the removal of the spleen to facilitate the elevation of the tail of the pancreas and control of the blood supply. This, however, is hardly necessary in a thin patient when with good exposure, careful separation of the tail with clamping of vessels before their division gives the operator control of the situation. Dissection must be carried out until just a small portion of the head in the curve of the duodenum remains. Division of the organ between clamps completes the removal. The stump is touched with cautery and closed with chromic catgut or fine silk and covered with fat or posterior peritoneum if it can be picked up. A drain is inserted and stitched down to the stump and the wound closed. There may be some drainage for a time and in some of the reported cases, a pancreatic fistula persisted for a short period.

*Results.*—Good results have been reported when a tumor was found and removed. This usually constitutes a cure.

When no tumor has been present and a resection of the pancreas has been done the results have not been very successful. In reviewing the literature, one is impressed by the possibility that often too small a portion of the pancreas has been resected. When fifty or more grams of tissue have been removed the best results have been obtained. The microscopic examination of the pancreas removed has consistently failed to show any pathological changes and it would be very difficult to estimate the number of Islands of Langerhans in a given section and to state whether there is an actual increase in their number. The fact that clinical improvement has followed, seems to point definitely to the fact that a causal relationship must exist. As to the permanency of the results from resection, time alone will tell. Judd felt that there was something more in these cases than the pancreas that was involved, probably the liver, even though postmortems have failed to disclose any gross abnormality in this organ.

## HYPERINSULINISM—CARROLL

**Case 1.**—The patient, a nurse, aged thirty, had always experienced good health. Five years previous, an appendectomy was done for chronic appendicitis. On August 8, 1934, while on duty as supervisor in a local hospital, she became unconscious and remained so for twelve hours and when she regained consciousness, she complained of diplopia and was somewhat confused. She had one or two similar but less severe attacks after this and various diagnoses had been made. She was referred to us with a diagnosis of menstrual disturbances with physic manifestations. She informed us that her attacks occurred about one week before onset of her menses and that she had been on various thyroid, pituitary and ovarian compounds with no relief. She was seen on the evening of March 21, 1935. Her parents stated that she complained of double vision while eating her evening meal. About ten minutes after this, she became irrational and later unconscious and extremely restless. She was threshing around in bed and it was necessary to restrain her. She did not recognize anyone of her immediate family. Following admission to the hospital that same evening, 1000 c.c. of 10 per cent glucose was given intravenously and this was followed by a gradual return to consciousness and rational speech. The physical and neurological examination was essentially negative. The blood pressure, hemoglobin, urine, leukocyte and serologic tests were normal. An x-ray of the skull showed no evidence of sella turcica changes. A non-fasting blood sugar, taken eight hours after the intravenous injection was 80 mg. per 100 c.c. of blood. Because of the almost immediate recovery following the glucose injection, a diagnosis of hyperinsulinism was made and we advised the patient to take large amounts of carbohydrates between her meals after she returned to her home.

The patient returned to her work as a nurse and got along very well for two or three weeks, taking sugar and orange juice every four hours. One night, while on duty in the hospital, she did not eat the usual amount of food and about one hour after the lunch time, her speech became somewhat slurred in character and diplopia developed. The house physician administered 20 c.c. of 50 per cent glucose intravenously with little or no effect, but when 30 c.c. of the same solution was given one half hour later, she immediately fell asleep and slept soundly all night. When seen the following morning, she had no complaints whatever, but was sent home and advised to remain in bed. Three hours later, before taking any more food, another but more severe attack started and the patient was again hospitalized. On arrival at the hospital she was in a very deep stupor and could not be aroused. She responded to sound and touch by only slight facial movements. The pupillary and corneal reflexes were normal while the abdominal were absent. Glucose was again given in 50 per cent concentration intravenously and again she responded by becoming restless and gradually recovered consciousness, again with diplopia and disorientation. The following morning, a glucose tolerance test was performed which gave the following result:

	mg. per 100 c.c.
Fasting	100
1/2 hour	151
1 hour	130
2 hours	139
3 hours	80

We did not attribute any significance to the test because of the large amounts of glucose the patient had received for twelve hours previous. The patient continued taking orange juice, etc., between meals and was able to remain at work for five months.

Another series of attacks came on in October 1935. At this time, we again performed a glucose tolerance test, this time without the administration of sugar for several hours previous. The readings were as follows:

	mg. per 100 c.c.
Fasting	76
1/2 hour	115
2 hours	136
3 hours	55

At the end of three hours, the patient was becoming irrational and restless and had to be restrained, necessitating the giving of more sugar. In view of the above findings, operation was advised. No tumor of the pancreas was found so over three-fourths of the pancreas (54 grams) was removed.

Each day for two weeks following the operation, the blood sugar readings were made. The lowest reading was 110 mgs., and the highest 180 mgs. About four months after surgery, the last glucose tolerance test was done. The result was as follows:

	mg. per 100 c.c.
Fasting	94
1/2 hour	166
1 hour	190
2 hours	155
3 hours	120

The patient returned to her nursing which consisted of a twelve hour night shift and after a time she began losing in weight. One night, she became exhausted and fainted. She later went back to work only to lose her position. She became very unhappy and worried so much that she was unable to sleep. She became very despondent and tried to commit suicide. She failed in the attempt, and, since then, has been working steadily and is feeling very well. Repeated fasting blood sugars have been normal.

(I am indebted to Doctor Joseph Ryan for the medical care and supervision of this case.)

Curiously enough, the first patient on whom Finney resected a portion of the pancreas committed suicide two years after the operation, while apparently in good health.

**Case 2.**—For two or three years previous to admission to the hospital, this young woman of thirty-five complained of excessive fatigue before breakfast each morning. This became gradually worse until she could barely awaken in the morning. She observed that by taking her breakfast in bed, these symptoms completely disappeared. While in the hospital, all food was withheld for a few hours and she had one of her typical attacks of unconsciousness. A blood sugar taken at that time was 40 mg. per 100 c.c. She was placed on a high carbohydrate diet and advised to take orange juice between her meals and at midnight. She sets the

## HEMORRHOIDECTOMY—SMITH

alarm for two different times at night, being awakened to take sugar, and has been unable to go any night without this routine. She has had no further attacks.

*Case 3.*—A white man, aged twenty-one, entered the hospital following an automobile accident two hours before. He had fallen asleep while driving his car. Questioning him later, he disclosed the fact that he often became excessively tired and sleepy during the day, especially when hungry. He was advised to take orange juice between his meals. His symptoms have disappeared completely. A blood sugar was never taken on this patient during an attack. However, a non-fasting blood sugar was 80 mg. per 100 c.c. of blood.

We have seen a number of additional patients with hypoglycemia who develop symptoms of weakness, loss of strength and fatigue until the

next meal is obtained. Their blood sugars taken at various intervals while fasting have been from 60 to 70 mgs. Having these patients adjust their diets to the metabolic requirements has taken care of this class of cases very well.

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## HEMORRHOIDECTOMY: A PLASTIC OPERATION\*

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THE surgical treatment of hemorrhoids has been a subject of universal interest for ages and many different technics have been evolved and offered as the solution of this problem. The types of operations described vary so remarkably in their aims and in the methods of accomplishing these aims that it seems not unfair to conclude that no one technic has proved satisfactory in the hands of the majority of surgeons even though it may have been adequate in accomplishing the results desired by its sponsor. The number of surgical methods which have been suggested to insure satisfactory results and the variety of these methods must confuse rather than clarify the understanding of the physician who does not devote the major portion of his time and effort to the correction of anorectal diseases. The purpose of this paper is not to criticize specifically any of the existing methods, nor to assume to suggest a technic to supersede the methods now in use, but rather to suggest an approach to the problem of the surgical removal of hemorrhoids and to call attention to some pertinent facts that are frequently overlooked.

An ideal hemorrhoidectomy is one which provides for the thorough removal of the groups

of varicose veins underlying the mucous membrane of the distal portion of the rectum and the skin of the anal canal or perianal region and which produces a satisfactory functional result with a minimal deformity. This should be realized with as little discomfort for the patient as is possible and with the fewest postoperative complications.

It is not difficult to imagine the surgeon who, armed with a single technic or method, finds that the hemorrhoids he is about to remove do not conform to the requirements of that type of operation which he intends to perform. This occurrence is not impossible because a careful study of the size, situation and complications of internal and external hemorrhoids will reveal that these factors are extremely variable and that a surgical procedure which will prove ideal in the presence of three distinct hemorrhoids in the classic situations will fail dismally should the whole anal circumference be involved. If scar tissue is present as a result of a previous operation or a healed inflammatory process, or if an anal fissure or a fistula-in-ano is present, then a single method will fall short of its goal or only partially solve the surgical problem. With such a problem to solve, how should the surgeon proceed? The solution seems to lie not in any one method but in the use of the appropriate portions of several methods which will provide sufficient

\*From the Section on Proctology, The Mayo Clinic, Rochester, Minnesota. Read before the meeting of the Northern Minnesota Medical Association, Fergus Falls, Minnesota, September 1, 1936.

## HEMORRHOIDECTOMY—SMITH

flexibility to solve the problem. The answer would seem to suggest that each hemorroidectomy be studied as a distinct surgical problem based on the principles of plastic surgery with recognizable limitations and with tissues possessing peculiar anatomic and physiologic characteristics.

The response of the anorectal tissues to slight injury or unnecessary engorgement with blood is peculiar and this is especially true in the presence of internal and external hemorrhoids. This response is probably so generally recognized that but passing mention need be made of it. Edema, thromboses and exaggeration of the hemorrhoidal masses almost instantly follow slight injury to the part and follow undue engorgement with slightly less rapidity. The choice of anesthetic and the position of the patient during the operation will do much to avoid these two pitfalls. The anesthesia should be such that it will provide maximal relaxation and obviate the necessity of dilating the anus; it should be ample for the operation with a minimum of risk to the patient. In our experience at the clinic, sacral block anesthesia has fulfilled these requirements very satisfactorily. The prone ventral position with hips slightly elevated has also proved of distinct advantage in avoiding undue engorgement and affording much better exposure than the lithotomy position or the left Sim's position, although the latter does not cause the varicosities to become unduly distended.

One of the outstanding limitations which must be considered and which dictates to some extent the type of wounds which must result is the fact that the operative field is not sterile and that any attempted sterilization produces such transient results that the effort is futile. At the present time only momentary sterilization can be obtained and that at the cost of unnecessary injury and irritation. Granting this fact, only the simplest preoperative preparation seems indicated to insure merely the cleanliness of the rectum and the anus. The realization of this fact also dictates that one should emphasize the following which are applicable to nonsterile fields: (1) cleanliness, (2) surgical provision for drainage of the resulting wounds, (3) avoidance of unnecessary injury, and (4) removal of any tissue which may slough postoperatively unless that tissue is required temporarily for the performance of some important function in the

restoration of normal contour. The postoperative care of the resulting wounds is also dependent on the realization of this limitation and it would seem mandatory that frequent careful observation, gentle thorough cleansing, the application of non-irritating antiseptics, and the generous application of heat form the basis of such treatment.

The normal flexibility and mobility of the rectal mucous membrane and of the anal and perianal skin provide unusual opportunities for variation in the method of removing the hemorrhoidal plexes. This fact would seem to compensate, somewhat, for the multiplicity of the variations which occur in the size, situation, and complications of the internal and external hemorrhoids. It has been stated factually that there are three groups of hemorrhoids and that these occur in the right posterior, right anterior and the left sides of the anus. This may be basically true but the exceptions occur with such frequency that the fact proves to be of little actual value in practical application. To be armed with a technic which is based on the assumption of this distribution leaves much to be desired. The clamp and cautery operation, much praised and much criticized, is a very good example of a method which may be applied in those cases in which there are three typical hemorrhoids but which lacks flexibility to such a marked degree that should the hemorrhoids be very large, should they occur in more than three groups, or should half or more of the circumference of the anus be involved with hemorrhoidal tissue, this type of operation would prove inadequate. The surgeon is compelled to remove only a portion of the abnormal tissue and the result is usually characterized by considerable distortion and the definite likelihood of early recurrence.

The use of a suture or sutures to insure hemostasis and to restore the normal relationship of the rectal mucous membrane and anal skin at the level of the dentate margin provides the desirable flexibility of application sufficient to permit of the thorough removal of the hemorrhoidal tissue with the accuracy of a carefully accomplished anatomic dissection and with the restoration of normal relationship and function which is the object of the plastic surgeon. Such a method must be based on the judicious use of the advantages afforded by the mobility of the skin and the mucous membrane. The external sphincter

## • HEMORRHOIDECTOMY—SMITH

muscle also provides a landmark that is invaluable. The exposure of its fibers in the removal of external hemorrhoids is the assurance that the varicosities have been thoroughly removed and its proximal fibers provide a suitable anatomic indicator for the level of the dentate margin as well as providing a tissue suitable for the anchoring of the edge of the mucosa resulting from the removal of the internal hemorrhoid.

Whether a clamp is used to assist in the retraction and manipulation of the mucous membrane for the insertion of the suture is of little practical importance since such a clamp can be very narrow, unlike the necessarily broad clamp that must be used in the classic clamp and cautery operation. A narrow clamp will permit the use of multiple methods at numerous angles, which will meet the circumstances of the individual case.

The discreet use of suture material does not add materially to the postoperative discomfort of the patient and does not increase the incidence of postoperative complications. The discreet use of suture material suggests the use of a minimal amount of such material and also suggests that the stitches should not be placed too deeply. The necessary knots should be so placed that they will not irritate the surface of the open wound unless the exigencies of the case make this unavoidable.

It is true that to apply a single definite technic of ligation and excision may prove as limiting in its result as is the clamp and cautery but to use it in an unlimited manner as suggested permits enough latitude to allow the actual performance of a plastic operation rather than just a plain hemorrhoidectomy. Instead of permitting the denuded surface that results from the removal of the internal hemorrhoids to heal by granulation and epithelialization, or instead of pinching a quarter of the anal circumference into a smaller portion by the use of the clamp, it is possible to withdraw the edge of the mucosa distally and suture it to the proximal fibers of the external sphincter circumferentially, thus insuring a large anal diameter instead of causing deliberate mechanical constriction of the lumen. It is interesting that this will also do much to accomplish the desired hemostasis since the most active bleeding usually occurs from the cut edge of the mucous membrane. In using the clamp to assist in placing the suture above the internal

hemorrhoid, it is possible to take advantage of the fact that the excision of the hemorrhoid produces potentially a "V" shaped wound in the mucous membrane with the suture at the apex. Drawing the angle of the wound distally and spreading the sides of the wound and then suturing them into the proximal fibers of the sphincter will help to overcome the natural constriction caused by the action of the clamp and the suture when it is desired to insure ample anal lumen or when the amount of tissue to be removed causes the surgeon to fear postoperative constriction of the anal canal.

If one recognizes that the operative field is not sterile at the time of the operation, it is advisable to permit ample and free drainage of the wounds. This is best provided by allowing the sulcus formed by the excision of the external hemorrhoid to persist without attempting to close it. The edges of the sulcus can be readily approximated and it is a temptation to try to suture them so as to obtain primary union, but it has been generally recognized that, with but few exceptions, such an attempt will only increase the postoperative discomfort and complications and it will not hasten the healing of the wound. If the sulcus is unusually wide it is sometimes advisable to place one or two sutures in the margin of the skin, and to draw the edge of the wound toward the center of the sulcus and suture it to the base of the sulcus. If properly done, this will frequently help to control the bleeding from this portion of the wound and may help to prevent formation of tags.

The width of the sulcus in the skin is usually determined by the amount of hemorrhoidal tissue underlying the skin and if the surgeon desires to remove these hemorrhoids completely, he must remove the skin covering these varices. Several attempts have been made to provide a method of destroying the subcutaneous varices but the application of such methods proves successful in but a few cases, and more frequently than not produces external tags which, to the patient, are as troublesome as were the original hemorrhoids. One method of removing external hemorrhoids without providing sulci for drainage is the Whitehead operation, but the result of such an operation has little to recommend its general use. In this type of operation the mucous membrane is drawn through the anal canal and sutured to the margin of the skin resulting from

## PERIPHERAL ARTERIAL INSUFFICIENCY—REYNOLDS

the annular excision of the external hemorrhoids, the dentate margin having been ignored during the excision or attempted restoration of the tissues. A moist, irritating, bleeding ectropion of the rectal mucosa is the undesirable result and not infrequently there is some degree of rectal incontinence.

The fear of postoperative constriction seems to be the paramount reason for the reluctance displayed in removing external hemorrhoids sufficiently wide so as to produce a total cure. If the wounds are improperly treated postoperatively, or if such treatment is entirely neglected, this reluctance may be justified. If the wound is treated as a soiled or infected surgical wound, however, there is little ground for this fear.

The solution of the proper method of remov-

ing hemorrhoids in any given case probably lies not in the application of the one suitable method as much as it does in the appropriation of portions of several methods to form a composite operation based on the plastic needs of the patient. Understanding the anatomy of the part and bending it to the needs of the operator is of extreme importance. Recognition of the limitations and the peculiarities in the response of the tissues being dealt with will do much to assist in deciding on the type of operation as well as the preoperative and postoperative management. It would seem that to approach a hemorrhoidectomy as a plastic operation would do much to encourage the understanding of the problem and to indicate the solution of each case that might otherwise seem unduly perplexing.

### A PROPOSED NEW DIAGNOSTIC TEST FOR PERIPHERAL ARTERIAL INSUFFICIENCY

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**I**N OCTOBER, 1927, and again in August, 1928, Binger and Christie<sup>1,2</sup> published observations concerning pulmonary circulation under the influence of diathermy. They found that when diathermy is applied to the lung, the occlusion of the pulmonary artery produces an immediate rise of temperature within the lung, whereas occlusion of the bronchi has no effect upon lung temperature. Consequently, they concluded that heat produced in the lung by pulmonary diathermy is carried off by the circulation.

Based upon this premise, it was thought that by inducing a measured amount of diathermic heat in an extremity, an estimate could be made of the ability of the peripheral arterial system to dilate and carry it off. It was assumed that, rather than to permit an unusual temperature to develop within an extremity, the local arterial system would dilate to the maximum of its capacity in an effort to remove the excessive heat. Such a test as the one proposed might be regarded as a means of obtaining a clinical conception of the peripheral arterial dilatability. By no means can it, as yet, be considered an exact, laboratory-type of test. Then, too, clinical evaluation of the test would require modification by

such factors as abnormalities in the size of the extremity tested, age of the patient, and such other factors as might influence the test. Finally, it was apparent that no such test could be used in the presence of venous insufficiency.

Guided by the initial premise as stated and the other factors enumerated, extensive experiments were undertaken with diathermy equipment to determine what characteristics of capacity, frequency and voltage were most suitable for clinical use. Since the work is new in some respects at least, reference to the literature in the usual manner was impossible; however, in time, the following technic was evolved:

The patient is seated in a comfortable wooden chair with the feet extended beyond a 90° angle. Both feet are placed in contact with soaped metallic plates which are well insulated from the floor. It is immaterial whether cast foot plates or block tin is used. These foot plates are in turn connected with the diathermy machine by well insulated cords. Perfect insulation is necessary since some machines will show considerable leakage unless the cords are unusually well protected. An important feature of the test consists in the proper insulation of the heel and longitudinal arch by means of a folded towel or other

## PERIPHERAL ARTERIAL INSUFFICIENCY—REYNOLDS

insulating material. This insulation must extend up to the transverse arch. If this is neglected, the current follows the path of lesser resistance along the Achilles tendon. When the current follows this path, local burns may be produced.

With the apparatus thus correctly adjusted, the current should be turned on very slowly and increased gradually for the forty-five +—minute period of the test. Care must be taken not to exceed the tolerance of the extremity during the early part of the test. In this respect, clinical experience with the test is of considerable aid in estimating the rapidity with which the current may be increased. The history and physical findings are also of great value in such an estimation.

It is highly desirable to evaluate the reaction of the extremity in the early minutes of the test since the limb should be able to tolerate the maximum current for the final fifteen minutes. If this final tolerance is not experienced, the test should be repeated at a later date. However, if a satisfactory estimation of the condition of the arterial circulation is not obtained during the forty-five minutes of the test, it should not be repeated for several days, as the vasodilator nerves of the tested extremity may be exhausted.

When overheating occurs, it is indicated by the presence of cramps in the muscles of the tested limb, by redness, and by palpable increase of temperature. Such cramps are similar to those occurring in intermittent claudication. The basic etiology of the two is similar, consisting of an arterial blood supply inadequate to meet the demands required of it.

The tolerance of an average-sized upper extremity with a normal arterial system has been found by observation to be 200 milliamperes. That of an average, normal, lower extremity is 600 milliamperes. As previously stated, a normal extremity will tolerate its proper amount of current for at least fifteen minutes without developing cramps and without showing an appreciable palpable change of temperature.

In general, it has been noted that arterial insufficiency due to spasm will show complete dilatation and will give a normal response when a normal diathermic heat load is applied. That is,

no muscular cramps or elevation of temperature will be found when the tested limb is affected by arterial insufficiency due to spasm. On the other hand, when the peripheral arterial system of the tested member is affected by organic obstructive lesions, a subnormal tolerance will be found without any evidence of an increasing tolerance or dilatability during the test.

Consequently, through use of this test, the following differentiation is apparent: pure vaso-spastic disease is indicated by the usual history of blanching of the skin, coldness of the extremities, paresthesias, decreased capillary bed circulation and by a normal diathermic tolerance test. Organic obstructive lesions of the peripheral arterial circulation show the classic findings of coldness, intermittent claudication or even gangrene and a diminished diathermic tolerance test. Conspicuous overheating of the fingers or toes of the limb being tested apparently denotes an organic obstructive lesion of the arterioles, while a general overheating of the entire extremity indicates a similar lesion of the larger arteries. Also, overheating of localized areas other than the ankle or wrist indicates an organic obstructive lesion of a branch artery. Through the observations made thus far, these facts appear to be well substantiated, yet it is felt that further proof is necessary to establish them definitely.

Prognostically, also, this test might prove of significance. Past experience indicates that amputation is necessary when the diathermic test shows a tolerance of 35 per cent or less of normal. The only exception is found when the tolerance can be rapidly raised by diathermic treatment to 40 per cent or more of normal.

The investigations on which this paper is based have extended over a period of eight years. Much clinical and experimental evidence has accumulated over this period. This paper, then, constitutes only a preliminary report. It is hoped that further proof of opinions and facts herein stated can be arranged for publication in the near future.

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## FRACTURE OF THE OS CALCIS\*

### Apparatus for Traction

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IT IS generally conceded that fractures of the os calcis without proper reduction will result in a rather painful and permanent disability. Prolonged disability where compensation is a factor has more forcibly impressed the industrial surgeon with the seriousness of this type of fracture.

Flattening of the normal longitudinal arch due to

will not vary. The fracture is fixed more solidly than in a plaster molded cast.

Technic in the use of the apparatus is as follows: Since there occurs a broadening of the os calcis due to a longitudinal fracture, a Böhler clamp is first applied rapidly and with considerable force until a crunching sensation is felt or heard.

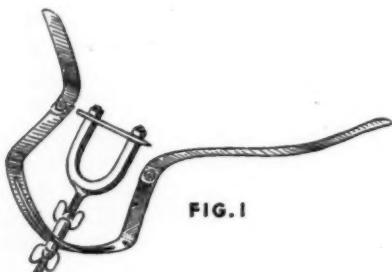


FIG. 1

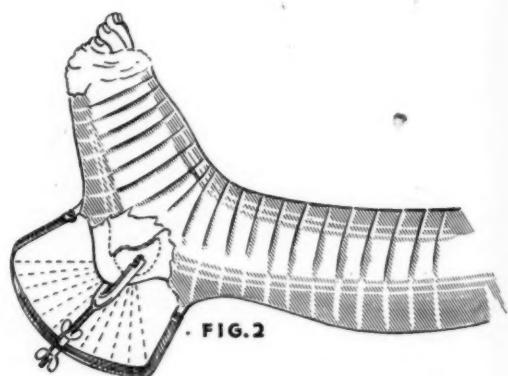


FIG. 2

narrowing of Böhler's angle which is normally about 30 degrees, will result in displacement upward and forward of the tuberosity of the os calcis due to the powerful pull of the tendon achilles. This displacement can be corrected by traction in the opposite direction.

The usual method employed in these cases is to put the patient to bed with the leg on a suspension splint, and to apply traction by means of weights attached to a Steinman pin thrust through the os calcis. Since a large percentage of fractures of the os calcis result in an upward and forward displacement, coupled with a telescopic impaction, a shortening of the long axis of the bone is produced. Traction in this type of fracture is frequently necessary.

The apparatus I have devised and used successfully, as here described and illustrated, has numerous advantages over the Böhler traction method.

It consists of three pieces of light band-iron and a traction yoke, (Fig. 1). The slotted arch pivotally bolted to the ends of the plantar shaped and calf shaped pieces of band-iron respectively, permits lateral deviation. The swiveled horse-shoe shaped yoke with its threaded elongation placed through the slotted arch of the iron band permits radial traction in the direction of the long axis of the bone, as it is moved along the slotted arch (Fig. 2). Thumb screws, one on each side of the slotted arch, provide both traction and the means for securely locking the traction yoke at the desired angle. Once the fracture is satisfactorily reduced, and the apparatus applied, amount and direction of traction

The point of Steinman pin is next fixed in and at right angles to the lateral surface of the bone at a point predetermined from the original x-ray for the most advantageous angle of traction.

Another picture is now taken with the tube directed through the long axis of the pin. If the pin is not in the proper position it can be changed before directing it through the bone. Entrance and exit of the pin is covered by sterile dressings. This is followed by a light wrapping of cotton and a light plaster cast extending from the toes to a point below the knee leaving free a large portion of the heel.

The swiveled horse-shoe shaped yoke of proper width is next fixed to the Steinman pin and the threaded extension put through the slotted band-iron which band-iron is then incorporated in the first cast by another wrapping of plaster. After the cast is dry enough, traction is applied with the thumb screws and another x-ray is taken to determine direction of traction which if not correct can be changed radially as well as laterally at will. The yoke is then permanently locked by the thumb screws on either side of the slotted arch.

Advantages of the apparatus are: early ambulation on crutches, a shorter period of hospitalization (usually about three days), variable directional traction with selective position and rigid fixation.

\*From the Winona Clinic, Winona, Minnesota.

# CASE REPORT

## THE GASTRIC ANTI-ANEMIC FACTOR IN SUBACUTE COMBINED SCLEROSIS\*

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and

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THE close relationship that exists between subacute combined sclerosis and pernicious anemia suggests that the two diseases are the result of a common etiologic agent. There is no direct evidence to indicate that such a condition actually exists and, indeed, one can find much to suggest that this relationship is more apparent than actual. If, however, the two diseases are related, then the basic etiologic factor should be an alteration in the gastric hematopoietic power, so that in subacute combined sclerosis even with a normal blood picture, we should still find some definite change in the gastric anti-anemic factor; and any alteration in this hematopoietic power could be determined by the method of Castle. Also, symptomatic relief of the neurological symptoms should occur in subacute sclerosis upon anti-anemic therapy if the two diseases are actually the result of one etiologic agent.

The beneficial effect of liver therapy upon the neurologic symptoms of subacute combined sclerosis remains a matter of controversy. No one author believes that there is any change in the pathologic lesions of the cord through the administration of liver, but most authors feel that there is a definite improvement in the neurologic symptoms, even though there is no effect on the neurologic signs as a result of anti-anemic treatment. Thus anti-anemic therapy lends little support to the supposition that pernicious anemia and subacute combined sclerosis are the result of a common etiologic factor.

Very few studies have been done concerning the gastric anti-anemic factor in subacute combined sclerosis. Salus and Reimon<sup>1</sup> investigated the hematopoietic power in subacute combined sclerosis by the method of Castle and concluded that there was no change in this function. Their material, however, leaves some doubt as to the validity of their conclusions. Palmer<sup>2</sup> in his investigation of one case feels that there is a distinct alteration of gastric hematopoietic power in subacute combined sclerosis, as he was unable to find any continued response with this type of prepared gastric juice in a patient suffering from pernicious anemia. His experiment is particularly valuable in that his patient had a normal blood picture.

We have had one patient suffering from subacute combined sclerosis whose blood picture has never varied

from normal. The gastric juice from this patient was obtained by lavage and prepared by the method of Castle. It was then fed to the patient suffering from pernicious anemia (Mr. S.) with the results noted.

Mr. S., white, male, aged seventy-four, complained of: (1) a tight feeling over the middle of the sternum with choking sensation and dyspnea on exertion; (2) epigastric distress for the past year, usually relieved by food; (3) weakness and drowsiness for the past year; (4) enlargement of abdomen the past year; (5) constipation for the past six months; (6) swelling of the ankles the past year. In 1927 the patient developed arthritis and was hospitalized elsewhere. In 1928 he began taking some patent medicine for arthritis. He took these pills for about one and one-half years, three times a day and thinks he got some relief. He still has some residual arthritis. About four years ago (in 1930), while at home, he developed a severe pain over the precordium. This pain was so intense that he hoped for death. A physician was called who gave him some medicine for the pain and sent him to the Ancker Hospital the next morning. The pain lasted for about eighteen hours and then disappeared. He has never had a similar attack. About one year ago the patient began to notice attacks of oppression over the middle of the sternum. These attacks were accompanied by dyspnea and a choking sensation, and came on with exertion. There was no radiation of pain. He has also noticed epigastric distress for about one year with a feeling of emptiness in the pit of his stomach which was usually relieved by eating. He has been bringing up slimy material from his stomach for the same length of time. He has noticed drowsiness and weakness for the past year. Occasionally during the past year he has noticed swelling of his ankles. He seems to think that his abdomen has enlarged somewhat in the past year. He does not think he has lost much weight. He has noticed constipation for the past six months. He was sent in to the hospital from the dispensary. His past health has been fine. He had measles when a child.

Past history by systems. Head: Scalp—no abnormalities. No headaches. No vertigo. For the past two years he has noticed spots before his eyes. This is getting worse and seems like a net in front of his eyes. His nose and ears are normal except for some deafness in the right ear. Mouth: no teeth, upper plate. Throat normal. Gastro-intestinal: Appetite poor. No qualitative or quantitative food distress. He has noticed blood in his stools occasionally. Genito-urinary: no nocturia, no frequency, no dysuria nor hematuria. Habits: Smokes one pipe a day. Drinks one or two cups of coffee a day. Does not use intoxicating liquors. His weight is 138 pounds.

Marital history: He has been married for twenty years. Wife, aged fifty-four, is living and well. He has no children.

\*From the Medical Service at the Ancker Hospital.

## CASE REPORT

Blood examination: Cells count 100.

Date	Hgb.	Million RBC	WBC	PMNs	Lymph.	Mono.	Eosin.	Retic.	Baso.	Platelets	Color Index
11-22-34	43%	1.82	12,250	53	32	2	6	..	..	....	1.6
11-25-34	27%	1.19	3,450	63	29	1	7	..	..	78,000	1.1
11-28-34	29%	1.23	4,250	51	40	3	6	..	..	36,000	1.18
11-29-34	27%	1.21	3,050	32	50	4	..	.2%	..	..	1.1
12-3-34	33%	1.57	6,600	54	36	4	6	2.0%	Pos.	....	1.05
12-5-34	28%	1.22	4,950	51	38	3	7	..	1	24,000	1.1
12-7-34	30%	1.41	7,000	62	30	1	7	..	..	100,000	1.06
12-10-34	29%	1.42	6,900	58	24	6	12	7.0%	..	125,000	1.
12-12-34	35%	1.60	6,550	66	34	1	8	..	..	86,000	1.09
12-14-34	34%	1.38	3,750	65	27	2	6	..	..	88,000	1.2
12-17-34	35%	1.50	3,650	61	30	3	5	9.6%	1	106,000	1.1
12-19-34	37%	1.46	2,750	46	39	5	7	..	3	160,000	1.2
12-21-34	37%	1.56	3,550	62	32	2	3	..	1	80,000	1.1
12-24-34	37%	1.31	3,700	61	58	..	1	..	..	68,000	1.3
12-26-34	35%	1.49	3,850	77	17	4	2	8.0%	..	70,000	1.1
12-28-34	39%	1.44	5,300	50	40	5	4	27.0%	..	124,000	1.3
12-31-34	43%	1.89	6,350	65	25	4	4	..	..	112,000	1.1
1-5-35	58%	2.05	9,400	71	21	1	3	10.0%	..	228,000	1.4
1-10-35	53%	2.36	6,750	57	36	1	5	..	1	....	1.1
1-15-35	52%	2.40	10,300	67	22	6	3	..	2	....	1.1
1-21-35	60%	3.24	6,650	58	39	6	7	..	..	..	0.92
1-24-35	63%	3.20	6,650	73	25	..	2	..	..	282,000	0.98
1-30-35	78%	4.10	....	..	..	..	..	..	..	....	0.95

Family history: Father killed in war. Mother died at the age of forty years. He has one brother.

Physical examination revealed a white man, aged seventy-four, fairly well nourished, but appearing pale and anemic. Examination of his head showed the scalp to be normal. Eyes: the pupils were small, equal and regular. They reacted to light and accommodation. The conjunctiva was pale. Examination of the ears showed dried blood in the canal of the left ear. The patient stated that he stuck a razor in there to get the hair out and cut himself. His nose is normal. Examination of the mouth and throat revealed the tonsils to be enlarged. The mucous membrane was pale. The tongue appeared normal and there was no marked atrophy of papilla. Examination of the thyroid showed no enlargement. Cervical and axillary glands were not palpable. A few crepitant râles could be heard in the right lung base posteriorly. The breath sounds were normal. Examination of the heart showed the tones to be distant but normal. No murmurs. The rhythm was regular. His blood pressure was 110 over 60. No masses were palpable on examination of the abdomen, but there was tenderness in the mid epigastrum on palpation. There was slight rigidity. The liver and spleen were not enlarged. He had a right indirect inguinal hernia. Examination of the genitalia showed the left testicle to be atrophic. Rectal examination revealed no masses nor tenderness. Examination of the extremities revealed arthritic deformity in the metacarpophalangeal joints of the right hand with inability to extend the fingers. There was an old injury to the right elbow, with inability to completely extend that elbow. The left leg was discolored from old varicosities. There was moderate edema of both ankles. The knee jerks were normal. Babinski's sign was negative. Deep sensibility was normal.

Impression: Coronary sclerosis with generalized arteriosclerosis and possibly mild decompensation. Pernicious anemia. Possible cancer of the stomach. Hypertrophic arthritis, and right indirect inguinal hernia.

Laboratory work: Urinalysis revealed color, amber; reaction, acid; specific gravity, 1.016; albumin, negative; sugar, negative; hyaline casts, negative; leukocytes, very occasional; erythrocytes, negative.

Gastro-intestinal study showed no abnormalities of the stomach and duodenum. Peristalsis was complete. There was a suggestion of a slight herniation of the cardiac end of the stomach through the esophageal orifice. X-ray of the colon was negative for any evidence of organic pathology. There was considerable

spasticity in the descending and sigmoid portion. Icterus index was 17 per cent.

The electrocardiograph examination was practically normal. X-ray of the heart showed an apparently slight diffuse enlargement. Fluoroscopically there was seen slight pressure on the esophagus by the left auricle, and increased prominence of the ascending aorta was evidently due to torsion of sclerosis rather than appreciable dilatation. Some widening of the heart base, however, was not ruled out. X-ray of the lung revealed a slight generalized increased prominence of lung markings which may represent slight early congestion. There was calcification of the right root.

The prepared gastric juice was fed to the patient from November 25, 1934 until December 24, 1934. During this interval there was no distinct improvement in the patient's clinical condition. On December 26, 1934, normal gastric juice, prepared by the method of Castle was fed to the patient, and from this date until January 30, 1935, the patient made a distinct clinical improvement in his pernicious anemia.

The patient with subacute combined sclerosis has been under observation since then until November 1, 1936, and there is still no alteration in his blood picture. It remains perfectly normal. The patient suffering from pernicious anemia has remained in a state of remission since January 30, 1935, by the use of extralin by mouth.

### Conclusions

The gastric juice of a patient suffering from subacute combined sclerosis but with a normal blood picture was investigated for its hematopoietic power by the method of Castle. This prepared gastric juice caused a transitory reticulocyte response but no increase in the various blood constituents. The prepared gastric juice from a normal individual when fed to this pernicious anemia patient alleviated and brought about a remission from the pernicious anemia.

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## EDITORIAL

### MINNESOTA MEDICINE

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#### BUSINESS MANAGER

J. R. BRUCK, Saint Paul

Volume 20

APRIL, 1937

Number 4

### Uncover Tuberculosis by Modern Methods

THIS is the slogan of the tenth annual early diagnosis campaign of the National Tuberculosis Association and its units. Starting in April with an intensive educational effort, the tuberculosis associations of the country will build their 1937 educational program around this theme.

A Prussian king is reported to have said three things were needed in waging any war: "Money, money and more money." Today in the fight against tuberculosis we know that three things are needed—education, education and more education. For despite progress made in this campaign, statistics show that eight out of ten patients have reached an advanced stage of tuberculosis before treatment is started.

Just why do people delay? This question was

put to a group of patients in a study by the National Tuberculosis Association and the most common answers were: "Too busy," "lack of funds," "fear of doctors," "fear of losing a job," "fear of being told it was tuberculosis."

Delay in tuberculosis is costly. It may mean death, or at best an exceedingly limited life on recovery-prices that need not be paid if the doctor is given the opportunity to "uncover tuberculosis by modern methods."

A diagnosis delayed until symptoms are complained of, means in many cases a diagnosis made too late. The modern plan is to hunt for the disease before symptoms appear, by the routine examination, including the tuberculin test and x-ray, among all who have had known contact with tuberculosis, of high school and college students and others in the age periods during which the disease is most prevalent.

The physicians of the state are invited to take part in this educational campaign by giving special attention in their medical meetings to the modern methods of uncovering tuberculosis.

By means of radio and other talks, newspaper articles, educational films and the distribution of special literature, public attention at this time is being directed to the modern methods available in discovering tuberculosis early. The Minnesota Public Health Association, the state Christmas Seal organization which is in charge of the state campaign, will send interested physicians samples of the new leaflets, if a request is sent to headquarters at 11 West Summit Avenue, Saint Paul.

### Our Council on Pharmacy and Chemistry

AT THE close of the last century physicians were at a loss to know not only the composition of many proprietary and patent medicines, the borderline between which is none too clear cut, but also to know their value medicinally. Many remedies were offered to the profession through the columns of the medical journals without any investigation as to their value. To put therapeutics on a more rational basis so that physicians need not prescribe remedies of

## EDITORIAL

unknown composition or of doubtful value, the national medical organization established in 1905 the Council on Pharmacy and Chemistry whose function it should be to analyze drugs and investigate their therapeutic value. The personnel of the Council was carefully chosen for the most part from the faculties of medical schools so that its deductions would be unbiased and reliable. The members have served in the interest of science and without compensation and the Council has operated at some expense to the profession in the interest of better therapeutics.

The reports of the results of the labor of the Council have appeared periodically in the volume entitled "New and Non-Official Remedies" which includes remedies approved by the Council. In addition, reports of remedies approved and not approved appear constantly in our national journal. The Council has also published a small volume entitled "Epitome of the United States Pharmacopœia and National Formulary" which contains information useful to the profession in these two volumes. Another volume has also been published at intervals since 1913 entitled "Useful Drugs." This small volume was designed to meet the needs of courses in *materia medica* in medical schools and of state examining boards. Another small volume has also been published jointly by the Council on Pharmacy and Chemistry and by the Council on Medical Education and Hospitals, and is entitled "Hospital Practice for Internes."

All the energies of the Council have, therefore, been directed towards simplifying medication and placing it on a scientific basis. No doctor need be confused by the multitudinous new remedies offered by the detail men from the pharmaceutical houses. He can easily obtain information regarding medication which has been investigated and found to be of value. The trial of every new remedy by the rank and file of the profession is extravagant and needless. The prescription of drugs of unknown composition is inexcusable. Many of the new proprietaries are simply combinations of known drugs. Occasionally a pharmaceutical house will discover a drug of real value and is entitled to the financial compensation resulting therefrom. The Council simply insists that the name applied to such a new remedy shall reflect its composition rather than its use.

Time and time again manufacturers have de-

veloped remedies, of some value, advertised them to the profession and when they became best sellers have directed their advertising to the public. Notable examples are Listerine, Glycothymaline and Fellows Syrup of Hypophosphites. Although such remedies doubtless have some value, their advertising claims have been inexcusably and have fostered self medication.

Our efforts to improve therapeutics by the establishment of the Council met with rather general approval. The most important pharmaceutical houses have coöperated to a considerable degree. All the state medical journals with the exception of the *Illinois Medical Journal* agreed to accept only Council approved articles. Even some of the newspapers have coöperated to the extent of cleaning up their advertising. It is unfortunate that there has not been 100 per cent coöperation on the part of the profession, for the Council on Pharmacy and Chemistry is *our* Council and is working to eliminate secrecy and fraud from therapeutics. The fact that commercial concerns and quacks, although they have challenged the findings of the Council on numerous occasions, have never successfully upheld their accusations in any courts in the land, speaks for the accuracy and thoroughness of its work.

### Duluth and the State University

THE present agitation to establish a local division of the University in Duluth has the hearty support of all the profession the writer has been able to contact. We now have a Junior College ably conducted under Dean Chadwick in connection with our largest high school. This space is already inadequate and testifies to the great popularity of the division.

We also have a State Training School for Teachers, the type formerly called Normal School. It has a commanding site and an excellent group of buildings. The plan to combine both of these services in the State owned Teachers' College unit is widely favored. At the present time most teachers have more than "Normal School" credits. There is not the dearth of college graduates that formerly made such Teachers' Training Schools imperative. In fact these units have proceeded to give full college training and degrees. It would be conspicuously easy to make

## EDITORIAL

this indicated merger and it would very greatly extend the opportunities for University enrollment in the third largest city in the state. The saving of expense to local parents would be very great, and many other obvious advantages would accrue. The Junior College enrollment would be very greatly increased at once. Students now taking the first two years given have been accepted widely and none have been reported inadequately prepared when accepted for enrollment in professional schools, or for advanced courses. What reason is there to expect that the full four years' academic work would be done any the less efficiently?

The writer does not desire to enter upon any discussion of the matter of what such splitting up of the University into units might do to the parent institution in Minneapolis. It should never extend to other than the undergraduate or academic schools. The local divisions of the agricultural school have in no way abridged either the position or the dignity of the central school; and its faculty would appear to have, with less strenuous routine, more opportunity for real University effort and research. The respective commercial interests of the various cities (including Duluth) should not be considered as especially weighty arguments.

E. L. T.

### Annual State Meeting

THE program of the eighty-fourth annual meeting of our State Medical Association which will be held in Saint Paul next month, appears in this issue. There will be medical, surgical and general sessions with part of Monday afternoon devoted to medical economics, an industrial dinner Tuesday evening, and a Public Health meeting open to the public following the dinner. Wednesday will be entirely devoted to the consideration of injuries. The Congress of Allied Professions which meets Monday at the Lowry Hotel will join us in the evening at the Auditorium.

While most of the program is to be furnished by local talent, a number of out-of-state visitors will add interest to the meeting by their contributions to the economic as well as the scientific aspects of medical practice.

Sunday night the House of Delegates will be

addressed by Dr. Olin West, who always has a message from our parent organization. The Delegates will also hear Dr. Edward Skinner of Kansas City, on Social Security in Missouri. Dr. Skinner is a radiologist of experience and is being brought to the meeting by the Minnesota Radiological Society. In addition to being chairman of his local medical society library committee he is on the editorial board of the *American Journal of Roentgenology and Radium Therapy*. He will also speak on the x-ray of fractures Wednesday.

The Medical Economics meeting, Monday afternoon, will be addressed by Dr. Maxwell Lick, President of the Medical Society of the State of Pennsylvania. His subject is Social Security in Pennsylvania, and he will also speak Wednesday on surgical diagnosis in regions of the abdomen. At this meeting, Monday, will also be heard Dr. Nathan B. Van Etten of New York, who is speaker of the National House of Delegates, and Dr. Morris Fishbein, who is always amusing as well as instructive.

The Industrial Dinner, Tuesday, will replace the usual banquet and following the dinner, Governor Benson will welcome visitors. Dr. Adson will give his presidential address, and Mr. Voyta Wrabetz of Milwaukee, who is a lawyer and has been a member of the Wisconsin State Industrial Commission for the past ten years, will speak on coöperation between physicians and commissioners.

The Public Health meeting, Tuesday evening, will be open to the public. Among those who will address this meeting will be the Reverend Alphonse M. Schwitalla, Dean of the St. Louis School of Medicine, President of the Catholic Hospital Association, Editor of *Hospital Progress*, and Professor of Biology at St. Louis University. Dr. Van Etten will also speak, and Dr. R. G. Vonderlehr, Assistant Surgeon General of the U. S. Public Health Service and in charge of its Division of Venereal Diseases, will speak on the present campaign for the control of syphilis. The meeting will be closed with an address on Quacks of the Year, by Dr. Fishbein.

The Northern Minnesota Medical Association is sponsoring two visitors this year. One is Dr. Francis D. Murphy of Milwaukee, who is Professor of Medicine at Marquette University and who will speak on Hypertensive Heart

## IN MEMORIAM

Disease. The other is Dr. John M. Wheeler of New York, Professor of Ophthalmology at Columbia University and director of the eye service at Presbyterian Hospital since 1928.

Another speaker on Wednesday will be Dr. Michael L. Mason, Assistant Professor of Surgery at Northwestern University. He has been associated with Dr. Allen B. Kanaval and Dr. Sumner L. Koch since 1926 and will discuss hand infections.

High voltage x-ray in the treatment of cancer is at present in the limelight. Dr. Robert Stone of San Francisco who spent some time in research in anatomy at Peking Union Medical College before specializing in x-ray, will speak on the possibilities of this new form of treatment of cancer.

It will be seen that the program committee has prepared a treat for the members of the Association. The meeting should add new stimulus to members and they are urged to bring their wives to share in the entertainment to be provided by the Women's Auxiliary.

### In Memoriam

#### Carl William Forsberg 1897-1937

DR. CARL W. FORSBERG, Minneapolis, died at the University Hospital, February 21, 1937, at the age of thirty-nine. He had been in poor health for three years.

Dr. Forsberg was born July 13, 1897, in Saint Paul. He received his M.D. degree at the University of Minnesota in 1923 and took a six months' internship at the Western Pennsylvania Hospital beginning in July, 1922, and another six months at the Grasslands Hospital in Valhalla, New York. He entered private practice at Oconomowoc, Wisconsin, in July, 1923, before entering the Mayo Foundation in January, 1924, for two years as a fellow in surgery.

In January, 1926, Dr. Forsberg became associated with the Sioux Falls Medical and Surgical Clinic, in Sioux Falls, South Dakota. In 1933 he became a graduate student in the pathology department of the University of Minnesota and became an instructor in that department. He passed preliminary examinations for a Ph.D. degree last December.

Dr. Forsberg married Cora L. Lokengard on December 8, 1928. He is survived by his wife; a daughter, Beverly Jean; a son, Richard William; a sister, Myrtle Forsberg of Charleston, Iowa, and a brother, Elmer J. Forsberg, of Saint Paul.

Carl G. Kroning  
1905-1937

DR. CARL G. KRONING, a native of St. Charles, Minnesota, and who began practice there in April 1933, died suddenly on February 22, 1937. He was born December 14, 1905, in St. Charles. High blood pressure caused the finishing of his career at the early age of thirty-one.

Graduating in 1923 from the St. Charles high school where he was prominent in athletics, Dr. Kroning worked in a local drug store until he entered the University of Minnesota medical school in 1926. Receiving his medical degree in 1932, he spent a year as intern at St. Mary's Hospital, Duluth, and then began practice at St. Charles in association with Dr. F. H. Rollins.

Dr. Kroning was a member of the St. Charles Masonic Chapter and of the Berea Moravian Church and was active in civic enterprise, having been largely responsible for the organization of the Junior Chamber of Commerce of St. Charles. He was a member of the Winona County Medical Society and the Minnesota State and American Medical Associations.

Dr. Kroning is survived by his mother, Mrs. H. G. Kroning; three sisters—Nora of Washington, D. C., Ruth (Mrs. Leonard Happel) of La Crosse, Wisconsin, and Clara of Minneapolis; three brothers—Clarence of Minneapolis, Hubert of Sandstone, and Walter of St. Charles.

A strong rugged character, gone with the ebbing tide. Long shall we cherish his memory

FREDERICK H. ROLLINS, M.D.

#### Protamine and Insulin Preparations

From its introduction fourteen years ago, insulin underwent relatively little modification until Hagedorn and others of Denmark showed that the blood-sugar-lowering action of insulin was prolonged when it was combined with protamine. Subsequently, Scott and Fisher, working at the University of Toronto, found that the addition of a zinc salt to a protamine and insulin mixture enhanced the prolongation effect of insulin in diabetic patients. Various investigators in collaboration with the University of Toronto group have aided in the development of a pharmaceutically improved product of insulin, modified by the presence of protamine and zinc, which may be dispensed in a single vial. This product has now been designated "Protamine Zinc Insulin." Protamine Zinc Insulin does not replace insulin (unmodified) in all cases or under all circumstances. Protamine Zinc Insulin may be used alone or used concurrently with the administration of unmodified insulin; or in some cases unmodified insulin may be used to advantage without employing Protamine Zinc Insulin. For the sake of consistency in nomenclature and to avoid confusion in medical literature, physicians and investigators should bear in mind distinctions between the following terms: Insulin as a term for the unmodified insulin of commerce. Protamine Insulin as a product to which no zinc salt has been added. Protamine Zinc Insulin for the product modified by the addition of protamine and a zinc salt, with other substances. (J. A. M. A., Feb. 20, 1937, p. 644.)

It is said that 300,000 goats per year are required to furnish the mohair needed annually by the automobile industry.

# MEDICAL ECONOMICS

Edited by the Committee on Medical Economics  
of the  
Minnesota State Medical Association

B. J. Branton, M. D.  
L. H. Rutledge, M. D.

W. F. Braasch, M. D., Chairman

J. C. Michael, M. D.  
A. N. Collins, M. D.

## County Officers Meet

### County Committees of Three

One of the high points of the County Officers' Conference was the emphatic endorsement given to the work of the County Committees of Three.

These committees were organized originally to work with SERA organizations in each county. They were to advise with relief workers about medical relief problems, iron out difficulties.

That the functions of alert committees have enlarged considerably since the early days of SERA coöperation is clear from the report made by Dr. A. H. Zachman at the morning session of the conference.

The County Committee of Three is now in a position to be the connecting link between the physicians and every welfare activity in the community. It is or may be the means by which physicians assist and guide and coöperate in every community undertaking.

### They Promote Goodwill

"There is only one legitimate way for doctors to advertise themselves in their own communities; that is by making themselves and their objectives known to the officials, to representatives in the legislature, to the welfare workers. The best way to do that is through the Contact Committees. These committees were organized to protect the doctors' interest, of course. But they are also ready at hand to extend the doctors' services; to make it possible for doctors to take an active part in the welfare work of the community, to promote goodwill."

### Many Are Active

Unfortunately, not all committees function according to Dr. Zachman's plan for them. A good many function sluggishly and a few are inactive altogether. But the majority have some real accomplishments to their credit and there should no longer be any doubt in the minds of

anybody as to the value, not only to the practicing physicians, but to the public, of the official participation of representatives of Organized Medicine in welfare and Social Security programs.

### Varied Program

Dr. Zachman's discussion of the Committees of Three was one phase of a many-sided program designed to help hard-pressed officers of medical societies to meet the confused and ever-changing situations that confront them in all their relations with the world at large, as well as to assist them with their individual society programs.

The justice of the frequently repeated truth that no hard and fast rules governing immunization can be made that will be satisfactory for all localities was re-emphasized at the breakfast round tables.

### Immunization

Where one county society prefers to give immunizations and even vaccinations at the school houses, another is convinced of the superiority of a system which calls for all service to be done in the doctor's office.

By the same token, the amounts of fees vary with each community and so do the arrangements made to take care of the children whose parents are unable to pay any fee. In one case reported at the breakfast, a modest charge of 50 cents was made for vaccination and Red Cross funds were drawn upon to pay for vaccinations of those who could not pay their own. A definite week was set aside for the work; all the physicians participated. Dues of all members were paid to the state society out of the proceeds and the remainder was divided among the physicians.

### Relations Improve

Comparison with similar discussions in former years indicated a decided improvement in relations between medical officials and the welfare authorities of their localities.

Gradually but steadily, arrangements for care of the indigent are improving in most parts of the state. There are sections, furthermore, where arrangements and relations are entirely satisfactory to physicians.

Breakfast discussions were occupied to a considerable extent with these matters but not exclusively. There was the matter of membership to occupy many of the county secretaries.

### "Do Not Be Hasty"

An interesting warning about membership was issued from the floor. It was to this effect: Do not be too hasty in refusing membership to what may appear to be an unpromising candidate. In some authenticated cases an undesirable candidate for membership has developed, within the membership of his county society, into an ethical practitioner and an entirely satisfactory member of the society.

It was suggested in a district which has tried it and knows that a well arranged, well promoted "medical economics" meeting, so-called, is an excellent means of extending membership and of keeping the interest and activity of all members.

Following are brief excerpts of what speakers on the formal morning and afternoon programs had to say:

### Choice for the Industrial Worker

P. C. LECK, M.D., Austin

In Mower County last year the physicians stood firm in refusal of the county contract for care of the indigent. County commissioners refused to consider medical care on a fee basis and hired an outside physician to come in at a salary, in defiance of local men.

Next month the contract comes up for renewal. It seems probable that the county commissioners will see the matter differently than they did a year ago. The "strike breaker," so-called, has not proved wholly satisfactory even to those who brought him into the county.

There is a grave threat to private medical practice in the development of contract practice by large industries.

The company doctor is seldom instructed to confine himself to compensation cases. He branches out in competition with the doctors of the community and there is grave danger that the private practitioner will be squeezed out entirely in small communities, especially where large parts of the population are employed in the industrial plants.

Labor troubles, taxes, are prompting the big companies to look around for a place to spend their accumulations for the benefit of employees. Business men like to dabble in medical care. It seems to me that industrial practice holds more dangers for the private practice of medicine than care of the indigent.

Why shouldn't the workingman have his choice of physician?

### No Need for State Medicine

J. L. MCLEOD, M.D., Grand Rapids

If we have State Medicine in America, it will be for one of two reasons: either because State Medicine becomes necessary as it appears to be in Western Canada where no other medical care is available; or because, as in Russia, our people—and particularly our legislators—are so ignorant that cranks and propagandists can easily prevail.

State medicine will not become necessary so long as we, as doctors, work closely and unselfishly with relief authorities. There is no such situation in the United States as in the remote sections of Canada and no such situation need ever come to pass.

The danger that ignorant legislators may fall victims to false propaganda is a real one. The remedy lies first in electing intelligent men to represent us on Capitol hill and then in keeping them properly informed.

The State Capitol is more and more the mecca for spokesmen of self interest. Few laws will be passed this session that have not been promoted loudly by these same spokesmen. But reforming our legislative system is a matter, first, of electing a good legislature.

As a result of the work of the Interim Committee, some twenty bills have been placed before the Legislature, most important of which are the State Welfare Bill and the County Public Welfare Bill. The first calls for a central headquarters for administration of all welfare work; the second calls for a welfare board in each county for the same purpose.

In order to establish satisfactory county welfare boards it will be necessary to abolish the township system for care of the poor and a bill for this purpose is already introduced as part of the program of the Interim Committee.

Your representatives up here at Saint Paul are not going to abolish the township system, however, unless you make it emphatically known to them that you want it abolished.

The House of Delegates of the Minnesota State Medical Association went on record against the township system at its meeting in Rochester last May. It is high time that you told your legislators about the Roch-

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APRIL

## MEDICAL ECONOMICS

ester resolution on this system. We still have no less than twenty-two out of the eighty-seven counties on the township system. And there is little we can do to co-ordinate and re-organize welfare work until there is a public demand for this basic reform.

Most disinterested persons want to see a county welfare board with a representation of lay people of the community, people who are not county commissioners or politicians. It has been recommended that the boards be made up of five members, one or two of them county commissioners, two of them picked from the community by the commissioners. County commissioners have stormed when such plans have been suggested. They have asserted that they are elected by the people to administer county funds and so they intend to administer them.

The answer to that objection is, of course, that welfare funds are only in a part—and sometimes a small part—county funds. Funds are also provided by the state and the federal government and the commissioners should permit them to be administered in conformity with the state plans.

We respectfully request you to make this matter clear to your local county people.

There is no disposition on the part of anybody at the Capitol to interfere with the State Board of Health. We are endorsing the request of the Board, however, for additional space at the University.

### Current Health Education Campaigns

E. A. MEYERDING, M.D., Saint Paul

Several nation-wide campaigns for persuading people to secure early treatment for disease have been started in the last year. All of them present a challenge to the practicing physician.

The campaign of the Women's Field Army of the American Association for the Control of Cancer has the approval of Organized Medicine and commands our support.

The campaign of the Surgeon General of the United States Public Health Service for syphilis control has encountered difficulties at the outset in the fact, developed by a survey under his predecessor, that serological laboratories are inadequate and far from standardized and that a vigorous campaign to gather people in for examination and treatment must be accompanied by careful preparation in the way of education of physicians and improvement of laboratory facilities for serological tests. Plans are being laid in the Surgeon General's office for such preliminary steps.

Other efforts are organizing or have been organized already including as objectives the improvement of maternal and child welfare, control of diabetes, deafness prevention, sight preservation.

All of them are worthy in aim and will find many enthusiastic proponents. Physicians MUST be ready for them. They must be ready to assist wherever their help can be given with propriety. They must be equipped with the latest knowledge of technics and treatment so as to take adequate care of everybody who comes to them as a result of these campaigns.

Failure to rise to this challenge may well mean a new threat of bureaucratic interference in the private practice of medicine.

### For the Public Good

C. I. OLIVER, M.D., Graceville

You county officers will be interested to know that the medical profession is recognized in the Legislature. Legislators believe us when we come to them. They believe that we are telling the truth and that we are advocating only measures that are for the public good. That, of course, is a tremendous thing.

One tendency of these times should be noted and remedied. That is the tendency toward innumerable boards and investigators, all of whom want access to the confidential information possessed by the doctor.

There is a danger in all these requests to the intimate, confidential relationship between doctor and patient. The doctor cannot be too vigilant to protect this relationship.

### Duties of a President

C. L. SCOFIELD, M.D., Benson

It should be the pride and duty of the president to guide his society, not only to higher scientific attainment, but to greater harmony. It is the president's job to steer his society clear of petty jealousies.

He should be reasonably familiar with Roberts' Rules of Order, too, and he should have each program thoroughly in hand before the meeting so that he can introduce his speakers properly and promote discussion.

### Duties of a Secretary

C. L. OPPEGAARD, M.D., Crookston

As the secretary goes, so goes the society. The county secretary is the sergeant in the medical army. And the medical army, like the fighting forces, needs many good sergeants.

The secretary must be on speaking terms with all of the official agencies and he must be conversant with all the affairs of the community.

The secretary is responsible for society programs, of course, and it is our experience that local talent should be used for these programs to the extent of about 42 per cent. About 58 per cent of the talent should be from the outside and the visitors should be paid for their services. If you want good programs, it is our experience, you must be willing to pay for them.

Representatives of outside agencies, welfare workers and others should be invited to meetings occasionally and they should be asked to speak. There is no better way to show our good feeling and our willingness to work together.

Furthermore, all meetings, no matter who is the speaker, should be planned in detail. We fail, often, because we have not looked after apparently insignificant details.

## MEDICAL ECONOMICS

Coöperation with the state secretary's office is an essential part of the county or district secretary's work. He must answer communications promptly, disseminate information promptly and, above all, he must himself be convinced of the importance of medical organization.

### Membership

C. J. PLONSKY, M.D., Faribault

Keeping up the membership is a never-ending task but the energetic secretary can do it. He must keep in touch with recent medical graduates in his district and he must be ever watchful and alert to keep a hold on his lukewarm members. If the latter fail to pay their dues promptly a letter explaining to them in detail the work of the association and the benefits they derive from dues paid to it is helpful. Another prepared letter outlining the organization and its aims is useful for malcontents. These malcontents should be inside membership, if possible, instead of outside. Then you are in a position to educate them.

### Programs

L. F. HAWKINSON, M.D., Brainerd

Too many of the talks given before county and district societies are excessively technical. They exhibit the speakers' knowledge, perhaps, but give little practical information.

What the Committee on Hospitals and Medical Education wants is a list of speakers who are willing to give practical talks and who will indicate in advance the subjects on which they are prepared to speak. The secretary can study the list, then, and pick out speakers and subjects for his program according to the interests of his own members.

Programs should be arranged on all of the current public health programs including the syphilis, the cancer, the maternal and child welfare and the diabetes campaigns in order to keep the members posted.

Local talent should be used particularly during periods when the weather is bad and visiting speakers find it difficult to be present. Much hidden ability will be found among these local speakers.

Medical movies are available. Dry clinics, case reports, specimens add interest. Discussions can be started by writing questions, giving them to the speaker from a question box in order to avoid possible embarrassment.

Post-graduate education is being extended rapidly these days by means of the Refresher courses for which the federal government is providing funds: the courses provided by the University at the Center for Continuation of Study, the Extension Division of the University. In all these the Committee on Hospitals and Medical Education has acted in an advisory capacity or as sponsor. They do not, of course, take the place of the individual county or district society program. It is wise to retain the same program chairman from year to year and among his duties in connection with this important job, not the least is newspaper

publicity. Patients should know that their doctors are meeting. They should be aware, also, that all enterprising and worthy practitioners are and should be attending these meetings.

### County Medical Clubs

W. W. WILL, M.D., Bertha

We need local county organizations of some kind in every county in order to coöperate with the state association, with local county agencies.

Our Todd County Medical Club is part of the Upper Mississippi Medical Society. We have fourteen members, hold our own scientific meetings, have made a study of our own costs for presentation to county commissioners. Such county clubs are particularly welcome in districts where the affiliate society of the state association includes several different counties and serves long distances. They do not in any way interfere with the state organization. On the contrary they work closely with it.

### Public Health Association

J. A. MYERS, M.D., University of Minnesota

Minnesota's tuberculosis program is the best in the United States. Elsewhere they ask us repeatedly: how do you do it? I can tell them how we do it. We do it because of our close coöperation with the Minnesota Public Health Association. We do it because in Minnesota the Public Health Association and the Medical Association are not working at cross purposes. For more than ten years they have been united in a program to promote the early diagnosis and proper treatment of tuberculosis.

### Benefits to Both

O. J. HAGEN, M.D., Moorhead

There is much benefit for both organizations in the enlarged services our relation makes possible. At 11 West Summit Avenue, Saint Paul, we share in equipment, in expert personnel, in professional services that would be impossible to finance independently.

We share in far-reaching educational programs that would be beyond our means otherwise even to contemplate. I am thinking of our college lecture courses now so well established under the joint auspices of both organizations.

In the fight against tuberculosis Minnesota has made an enviable record. The modern program of tuberculin testing and x-raying of children has been carried to an extent equalled by few states. The educational campaign has been carried to remote districts. Our tuberculosis death rate is below the average for the nation. The possibility that tuberculosis may be reduced in Minnesota to a minor cause of death comes closer to reality each year.

To bring this ideal to pass calls for united action on the part of all of us.

## MEDICAL ECONOMICS

### Doctor in Charge

W. W. WILL, M.D., Bertha

The big thing from the point of view of our association is that a doctor should be in charge, not of the medical association only, but of the public health association as well.

The vigorous life of our medical organization in Minnesota in the last fifteen years is due to just one man—Dr. Meyerding.

### To Fight Quacks

A. W. ADSON, M.D., Rochester

It is our responsibility and obligation to counteract the propaganda of quacks on the radio and in the newspapers. We cannot do it better than by close coöperation with the public health association which is organized specifically for this important work.

### Malpractice

B. J. BRANTON, M.D., Willmar

Malpractice suits are increasing. One out of every four physicians is threatened each year in Minnesota. Nine out of ten of these cases are brought by people in the low income group. The only way to reduce this litigation is for the physicians themselves to work together—to avoid comments upon each others' work that might be seized upon as a pretext for suit; to avoid being drawn into any litigation as witnesses against their colleagues unless the situation clearly warrants such action; to keep adequate records. The fact is that 99 out of 100 malpractice cases are not warranted.

There are 3,089 licensed physicians in Minnesota of whom 73 per cent are members of the Association. In Minnesota there is now one physician for every 830 persons as compared with one to every 732 persons in Iowa. There are 713 specialists practicing in Minnesota, 630 partial specialists, so-called, and 1,680 general practitioners. It is, incidentally, of interest to note that the percentage of members of the bar association among lawyers admitted to the bar is 68 per cent.

An important decision was recently handed down by the Supreme Court; every physician should be aware of it. According to this decision, physicians are not required to insure a cure under any circumstances. They are required only to possess the skill and learning of the average practitioner in their own communities and to apply that skill and learning conscientiously.

Your attention should be called to the new membership card to which is attached, by a perforation, your malpractice card. This attached card entitles you to the consultant services of the Medical Legal Advisory Committee. It is appropriate that it should accompany your membership card and be ready at hand for use in any emergency. We hope it will act as a constant reminder, also, of the malpractice menace and the need for constant care to avoid it.

### Medical Care of the Needy

B. E. YOUNGDAHL, Director, Division of Co-Ordinated Field Service, State Board of Control, Saint Paul

There is no uniformity in the type of plan used by Minnesota's eighty-seven counties to give medical service to those receiving some form of public assistance. A number of counties have retained the old FERA plan, a few are operating under special agreements with all of the practicing physicians in the county, and some have gone back to the plan of employing a single county doctor. The last two plans have not worked out so well from the standpoint of giving effective service to the client.

Of the several plans now in operation for giving medical service to the people in need, the one based on the general principles of the FERA medical plan is most satisfactory. It not only gives the most effective medical service, but it also maintains certain important relationships. Under this plan the client has his choice of physician and the family-physician relationship is preserved. A mutually agreeable fee schedule is set up by the agency administering public aid and the medical group. The agency determines the financial need of the applicant and refers to the doctor of the client's choice for medical diagnosis and necessary treatment.

### Old Age Assistance

KENNETH HAYCRAFT, Director, Division of Old Age Assistance, State Board of Control, Saint Paul

It is the desire of the Division of Old Age Assistance of the State Board of Control that all persons in Minnesota who are eligible for aid under the Old Age Assistance Act receive such medical services as are necessary for their physical well-being. Ample authority is contained in the Old Age Assistance Act whereby the various counties in making grants of Old Age Assistance to Minnesota's aged needy can include the cost of necessary medical services.

Under an opinion of the Attorney General dated August 1, 1936, which interprets Section 5-c of the Old Age Assistance Act, the various counties are authorized to include in a grant of Old Age Assistance provision for medical care where a proper showing of need is made for the same. It is the policy of the Division of Old Age Assistance of the State Board of Control that medical care thus allowed should be primarily such care as will be needed over a considerable period of time. Requirements for special or occasional medical services by recipients of Old Age Assistance ordinarily should be taken care of outside of Old Age Assistance, usually through public relief or other county or local funds.

It is important from the standpoint of the effective administration of the Old Age Assistance Act not only that grants for medical services be made in terms of the needs of the recipients themselves but also that such grants be made with a view to insuring that physicians who render medical services to recipients receive

## MEDICAL ECONOMICS

adequate and proper remuneration for their work. Only on such a basis can a long-range program of medical care for Old Age Assistance recipients be successfully carried out; and from an administrative standpoint it is possible to execute this policy only if the chief medical services provided for by grants of Old Age Assistance are those services that will be needed by recipients over a long-range period.

### Social Security

E. C. HARTLEY, M.D., Director, Division of Child Hygiene, Minnesota Department of Health, Minneapolis

The Social Security Act is wide in its scope and touches many aspects of our national life. It must be borne in mind, however, that such of its provisions as pertain to health have been assigned in each State to the Health Department of such states for their administration.

Broadly speaking, what the State Board of Health is trying to do with the federal aid so obtained is to make the State more keenly aware of the promises of modern medicine in safeguarding individual and public health. In this purpose it is receiving the vital co-operation of the medical, dental and nursing professions. New Public Health Nursing Services are being established, and many services, both old and new, are being aided financially by the State Department of Health through its federal grants. A new section of Dental Health Education has been added, of which Dr. Vern D. Irwin, editor of *North-West Dentistry*, is superintendent. Education work in Maternal and Child Health is being greatly expanded.

A new educational venture, recently started by the Health Department in co-operation with the State Medical Association and the University Medical School, is the "Refresher Course in Obstetrics and Pediatrics" for Minnesota physicians. The first of the series is drawing to a close, and has been well received and well attended. With the coming of summer, these classes will be repeated throughout the state.

### For Crippled Children

H. E. HILLEBOE, M.D., Director, Division of Services for Crippled Children, State Board of Control, Saint Paul

On February 15, 1937, there were approximately 7,500 crippled children under twenty-one years of age registered in the Division of Services for Crippled Children of the Minnesota State Board of Control. Nearly 200 patients have been hospitalized in private hospitals and were given medical care and treatment with funds allotted to Minnesota under the Social Security Act for Services for Crippled Children. This expenditure includes the payment of fees to physicians, hospital costs and the cost of all necessary braces and appliances.

In the past six months of service, the six public health nurses employed by the Division to do public

health nursing among crippled children in rural areas have visited sixty-seven counties and have reported 616 new cases to the central registration bureau. Five hundred local physicians were visited, and a total of 2,652 nursing visits were made to and in behalf of patients through January.

Eight crippled children clinics have been held in rural areas up to the present time, and 719 crippled children under twenty-one years of age were examined. These clinics were held in co-operation with the Minnesota Public Health Association.

The original allotment to Minnesota for the fiscal year ending June 30, 1937, was \$49,000, and because of the need shown for additional funds, the Federal Government allotted Minnesota an additional \$41,000 to extend and improve services, particularly in rural areas.

Co-operative activities are being carried on with all private agencies interested in the crippled child. Plans are being made to develop a convalescent home where special care and special teaching would be available for cerebro-spastics and rheumatic heart cases, particularly. The outlook for the crippled child is definitely brighter, thanks to the allotment of Federal funds through the Social Security Act.

### Results

J. F. DuBois, M.D., Secretary, Minnesota State Board of Medical Examiners, Sauk Center

The following figures, based on Dr. DuBois' talk, show the working of the Basic Science Law since its passage in 1927:

On April 12, 1927, there were 465 osteopaths registered. Since then forty have passed the examination, one has come in by reciprocity and eight by previous licensure. Yet, in 1936 there were only 166 registered.

On April 12, 1927, there were 592 chiropractors registered. Since then thirteen have passed the Basic Science examinations and three have registered by previous licensure. Yet, in 1936 there were 410 registered.

In 1928 there were 111 midwives registered. Six new licenses have been issued to date. Yet, in 1936, only sixty-four were registered. There are no approved schools of midwifery in the United States. An applicant must pass a written and oral examination and must be vouched for by two reputable physicians.

### Syphilis Control

A. J. CHESLEY, M.D., Executive Officer, Minnesota Department of Health, Saint Paul

The syphilis program of the United States Public Health Service may lead to complications. It requires thought and study and planning for satisfactory results. Syphilis control is not a new thing. Public health officers have been working on it for a long time. Federal money will make it possible to extend the work, to establish more laboratories and furnish more drugs. Illinois is going to spend the money appropriated for syphilis control on drugs. In the long run, an adequate supply of drugs for use of all physicians who are treat-

ing syphilis will do more to control and prevent this disease than any number of free clinics.

### Outlook for Medicine

A. W. ADSON, Rochester

One thing is obvious. People are going to continue to be sick and we are going to take care of them. It is also obvious that those of us who are best qualified for the work will be the most successful.

New plans for care of the aged, the crippled, the indigent and the near indigent are being tried or planned for the future. Let us hope that those in charge will come to us for help. Let us hope that the patient, no matter whether he is indigent, aged or crippled, will be allowed to choose his own physician and that payment for the physician's work will be established on a fee basis.

Many problems remain to be solved. Some of them involve contract practice, some health insurance. In any case the answers are not easy and it is evident that we must work through our State Association and our committees if any satisfactory solution is to be attained. We are all interested in the larger problem which involves all of our lesser perplexities—the provision of adequate care for everyone who needs it and of adequate compensation to the physician who gives it.

We have our individual problem to solve also, the problem of keeping up to date. Post-graduate courses are being provided in far greater numbers than ever before. Every doctor will hasten to take advantage of them.

County societies must shoulder their individual responsibility for leadership in public health education in the community, for proper participation in the extension of immunization, in education about cancer, in improvement of maternal and child welfare of the community.

Our best defense against radical and subversive changes in our system of medical practice is certainly the sympathetic, energetic, and intelligent participation of physicians as a body in the welfare of the community.

### Distinguished Economic Speakers

Among the large number of interesting personages who will come to Saint Paul for the 84th Annual Meeting of the Minnesota State Medical Association, readers of these columns will be especially interested in Dr. Nathan B. Van Etten of New York City and Dr. Edward H. Skinner of Kansas City, Mo., both of whom will talk to Minnesota physicians on problems involved in the social and economic relations of medicine.

Dr. Van Etten is speaker of the House of

Delegates of the American Medical Association and he was one of the signers of the minority report of the Committee on Costs of Medical Care. He will address a Medical Economics symposium



DR. E. H. SKINNER



DR. N. B. VAN ETSEN

Tuesday, May 4, on the subject "Medical Care for All Americans." Dr. Maxwell J. Lick, Erie, Pa., president of the Medical Society of the State of Pennsylvania, and Dr. Morris Fishbein, Chicago, editor of the *Journal of the American Medical Association*, will appear with Dr. Van Etten on this symposium. The subjects of the latter two are: "The Doctor Looks at Social Security" and "Our Professional Future" respectively.

Dr. Van Etten will also give a public address on "The Medical Citizen" at the Public Health Meeting, Tuesday night.

Dr. Skinner will deliver the Russell D. Carman Memorial Lecture on the subject "Reflections on the Roentgenology of Fractures," Monday, May 3, but he will arrive in time, also, to address the House of Delegates, Sunday.

### Varied Interests

Dr. Skinner's interests are varied. He is president-elect of the American Radium Society, chairman of the Public Health and Welfare Committee of the Kansas City Chamber of Commerce and a director of the Council of Social Agencies. He has been editor of the *Kansas City Medical Journal* for the past five years and he was organizer, fifteen years ago, of the Kansas City Southwest Clinical Society which publishes the *Journal*. He also founded the Kansas City Library Club and has been continuous chairman of the Library Committee of the Jackson County Medical Society which, some fifteen years ago, took over the library started by this club. The library now numbers 25,000 volumes.

## MEDICAL ECONOMICS

### For the Congress

Readers of these columns will be interested to know that C. Rufus Rorem, Ph.D., formerly associated with the Julius Rosenwald Fund and an economist with the Committee on Costs of Medical Care, will come to Saint Paul to participate in the discussions of the Congress of Allied Professions, Monday, May 3. Dr. Rorem is now engaged as executive director in a study of voluntary hospital insurance under the sponsorship of the American Hospital Association for which the Rosenwald Fund recently made a grant of funds (See March issue, these columns).

Among other representative speakers from the allied professional groups who will speak to this conference are Dr. Martha Eliot, Washington, D.C., assistant chief of the Children's Bureau of the Department of Labor; Rev. Alphonse M. Schwitalla, S.J., dean of the St. Louis University Medical School and president of the Catholic Hospital Association; Miss Daisy Dean Urch, director of the school of nursing, College of St. Teresa, Winona, and president of the State League of Nursing Education; Dean Charles H. Rogers, College of Pharmacy, University of Minnesota, and Dr. Fishbein. Dr. George A. Earl of Saint Paul, chairman of the Council, is chairman of the committee in charge of the program.

### Syllabus

The syllabus of discussions which will be followed in a general way by all the speakers at the afternoon and evening sessions is printed below.

#### SYLLABUS OF DISCUSSIONS

A Frank and Impersonal Discussion of Present-day Opinion on all the Factors Involved in the Distribution of Medical Care with a View to finding the Best Means of Protecting the Health of the American People.

#### I. THE PICTURE TODAY

##### A. Health of the American People.

1. Classification of the population according to ability to maintain health and secure essential professional care and needs of each:

Wealthy	Marginal
Average	Indigent

2. Distribution of professional services to all classes.

Dentistry	
Hospitals and Allied Organizations	
Medicine	
Nursing	
Pharmacy	

Social Welfare Service  
Executives  
Anesthetists  
Dietitians  
Hospital and Medical Librarians  
Nurses' Training Schools  
Technicians

#### B. Programs of National and State Agencies.

1. Social Security Act.
2. Direct relief.
3. WPA.

#### C. Programs of Voluntary Agencies.

1. Experiments in care for indigents and low income groups by organized medicine.
2. Experiments and plans of organized dentistry.
3. Experiments in group hospitalization by hospital executives.
4. Outlook for all of these private efforts.

#### II. OUTLOOK FOR THE FUTURE

##### A. Changing Philosophies of Government.

1. Socialization of healing in foreign countries.
2. Tendencies in America.
3. Future government program.

##### B. The Destiny of the Professions in the United States.

1. Safeguarding of professional standards.
2. Protection of the rights of the individual; freedom of choice in professional services.

### Your Notification Card

(Monthly Editorial prepared by the Medico-Legal Advisory Committee.)

#### IF SUED OR THREATENED WITH SUIT, DETACH AND MAIL WITHIN FIVE DAYS

TO

THE MEDICO-LEGAL ADVISORY COMMITTEE

MINNESOTA STATE MEDICAL ASSOCIATION

11 WEST SUMMIT AVENUE  
SAINT PAUL, MINN.

AND NOTIFY YOUR INSURANCE COMPANY AT ONCE

"KEEP COMPLETE WRITTEN RECORDS"

1937 SIGN HERE

PRINT NAME

Above is a copy of the notification card attached to the membership card which each member in good standing should have received when he paid his dues for 1937.

MINNESOTA MEDICINE

Do not detach it from the membership card until it is needed in order to notify the state office of suit threatened or pending. Your Medico-Legal Advisory Committee has devised this means of bringing certain thoughts more forcefully before the association membership.

1. It should and will serve as a daily reminder that members owe a duty not only to their clientele but to the other men in the society and community.

2. When used, it will make available the efforts of the Committee in the member's behalf. To be effective, remember to send the card in before five days have elapsed, if possible; then answer the questionnaire sent you and return at once by mail.

3. It will make each one value the services of a good and competent insurance company. These companies are anxious to carry out the provisions of their policies. Give them a fair chance through early reports.

4. It draws attention to the fact that your Committee has found that nothing is so detrimental to a good result in a case as poor records. Keep your records carefully. Write them intelligibly and file them properly so that they are available at once.

5. It is a reminder again that you belong to an organization of men devoted to helping humanity, to the uplifting of the plane of human existence,—men in whom selfishness and deceit should be forgotten in the willingness to strive for each other's rights.

Is it not an honor and privilege to be able to carry a card with so many potential applications?

### Interest In The Survey

Many physicians answered the call for volunteers to assist in a survey of medical costs in Minnesota.

It is obvious that there is a genuine interest on the part of members and the committee in charge, including Dr. W. W. Will, chairman, Dr. A. W. Adson, Dr. G. A. Earl, Dr. T. H. Sweetser, Dr. E. A. Meyerding, and Dr. H. S. Diehl, is now at work on details of the study.

In the meantime, another letter will go out to all members, it was decided at a February

meeting, which will ask for general information on type of practice, gross cash income, professional expense, net income and the percentage of practice unpaid for or done without expectation of remuneration. Replies to this letter may be returned to the committee unsigned and every doctor, particularly older members whose estimates will be based upon experience over many years, are urged to reply to the letter.

### Minnesota State Board of Medical Examiners

#### Medical Board Issues Warning to Physicians Unlawfully Writing Liquor Prescriptions

On November 27, 1936, Mr. William Mahoney, Liquor Control Commissioner of the State of Minnesota, directed the attention of the State Board of Medical Examiners to the flagrant violation of the Liquor Control Act in this state by a number of physicians, particularly in the twenty-eight dry counties in Minnesota.

Following an investigation made by the Board in cooperation with Mr. Mahoney, it was ascertained that a number of physicians wrote out hundreds of prescriptions for liquor and that these prescriptions were not written in good faith. Some of the prescriptions were written in blank and merely signed by the physician. Others were written out calling for whiskey with no names on the prescriptions to show for whom they were intended, and in all of the cases the prescriptions were left at various drug stores to be used at the convenience of the druggist. As a result of the investigation, four physicians, two druggists and one veterinarian appeared at the meeting of the Medical Board, held on February 6, 1937. The Veterinarian Board was represented at the hearing by Dr. Robert Coffeen of Stillwater, Minnesota, secretary, and Mr. Knute D. Stallard, attorney. The Pharmacy Board was represented by Mr. Prochaska, secretary. Mr. Mahoney appeared on behalf of his department. He was also accompanied by Mr. Blake, one of the inspectors of the Liquor Control Commission. Everyone concerned admitted his guilt at the hearing and the four physicians were voted a reprimand by the Board. The evidence showed that, in some cases, the physician received no remuneration for the prescriptions, while, in one case, the evidence showed that the physician received five cents per prescription.

The Medical Board is of the opinion that it should hardly be necessary to reprimand a physician for this type of misconduct. The Board believes that it should be self-apparent to the medical profession of this State that their license to practice medicine entitles them to prescribe whiskey, in good faith, to bona fide patients for medicinal purposes only. The Board cannot urge too strongly upon the medical profession of this State

## MEDICAL ECONOMICS

that this type of violation of the law only casts reflection upon the entire medical profession. The Board feels that Mr. Mahoney was more than justified in calling the matter to the attention of the Board. Further violation of the Liquor Control Act by physicians will result in prosecutions and disciplinary action by the Board. The Board hopes by this article to call this matter to the attention of a large proportion of the physicians of this State. It is appreciated, of course, that by far the larger number of physicians respect and comply with the Liquor Control Act. It is the violation of the law by a small group that causes other individuals to suggest legislation imposing additional restrictions upon the medical profession.

In conclusion, the Board wishes to state that it appreciates the attitude displayed by Mr. Mahoney in first coming to the Medical Board rather than taking the cases to court. Mr. Mahoney has been assured that he will be shown a friendly and cooperative attitude. The Board asks that each and every physician in the state do his part to respect this law.

and pills for the treatment of diseases. Some patients he charged \$2.00 per treatment and others he gave a flat price of \$10.00. McHale was represented at the trial by Louis J. Pluto, former county attorney of Todd County. The defendant, throughout the trial, acted very confident as to the outcome but lost some of his enthusiasm when the jury returned a verdict of guilty. The defendant did not take the witness stand in his own behalf and his attorney spent a considerable portion of his argument to the jury in denouncing the medical profession, claiming that they were hostile towards chiropractors and natural healers. The argument apparently failed to impress the jury because they deliberated only a little over an hour before returning a verdict. Shortly prior to the trial the defendant stated to Judge Thompson that he was without means and the Court appointed Mr. Pluto to represent him at the expense of Todd County, as the law requires. The State was represented by Mr. J. Norman Peterson, county attorney of Todd County, and Mr. Brist, who was appointed assistant county attorney of Todd County for the purposes of the trial.

The State Board of Medical Examiners wishes to acknowledge the splendid piece of work done in this case by Mr. Peterson as county attorney. The Board also appreciates the prompt reference of this case for trial by Judge Cameron.

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### "Nature Healer" Convicted by a Jury at Milaca

*Re: State of Minnesota vs. R. A. McHale*

Following a trial by a jury, R. A. McHale, thirty-eight years of age, Long Prairie, Minnesota, was convicted, on March 23, 1937, at Milaca, Minnesota. McHale was arrested on November 13, 1936, at Long Prairie and charged with practicing healing without a basic science certificate. Following a preliminary hearing, the defendant was held to the next term of the District Court, and when arraigned on March 16, 1937, filed an affidavit of prejudice against the Honorable D. M. Cameron, presiding judge. Judge Cameron immediately referred the case for trial to Milaca, Minnesota, where the District Court was in session with the Honorable Anton Thompson, Fergus Falls, Minnesota, presiding. Just what prompted the defendant to file an affidavit of prejudice against Judge Cameron has not been made clear. Judge Cameron has a reputation of knowing the law and being a fair trial judge. At the conclusion of the trial, Judge Thompson sentenced the defendant to a term of four months at hard labor in the Todd County Jail at Long Prairie.

The evidence on the part of the State at the trial showed that McHale came to Long Prairie in May, 1936, from Brainerd, Minnesota. The evidence also showed that McHale represented himself as "Dr." McHale and that he told numerous persons that he was a chiropractor. In August, 1936, McHale opened an office for the practice of healing and put up a sign which read as follows:

PHYSICAL CULTURE INSTITUTE—  
PASSIVE GYMNASTICS—  
PSYCHOTHERAPY—  
R. A. MCHALE

The evidence further showed that McHale examined patients, prescribed diets, administered manual manipulation and light treatments and furnished salve

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### Fosston Naturopath Denied Basic Science Certificate by Court

*Re: State of Minnesota ex rel. Knute W. Luross, vs. Basic Science Board*

On February 5, 1937, the Honorable M. A. Brattland, Judge of the District Court of Polk County, Minnesota, made an order sustaining the demurrer interposed by the Basic Science Board in the action whereby Luross attempted to secure a basic science certificate without examination. Judge Brattland, in his order, stated:

"The facts in this case are substantially the same as those in the case of Shenk v. State Board of Examiners, 189 Minn. 1, 250 N. W. 353, and I cannot differentiate between them. I therefore prefer to give the Supreme Court another opportunity to consider the question."

Judge Brattland gave Luross a stay of thirty days to perfect an appeal to the Supreme Court of Minnesota, but no such appeal has been taken.

Luross was tried by a jury in the District Court of Polk County, in March, 1936, on information charging him with practicing healing without a basic science certificate and was found guilty. He was sentenced to a term of six months in the Polk County jail by Judge Montague and the sentence was suspended on condition that he refrain from practicing healing unless properly licensed.

Mr. John I. Davis of Benson, Minnesota, and Mr. W. E. Rowe of Crookston, Minnesota, appeared as attorneys for Luross. The Basic Science Board was represented by the Honorable Harry H. Peterson, then Attorney General, the Honorable William S. Ervin, present Attorney General, and Roy C. Frank, Assistant Attorney General. The work done by the Attorney General's office in this case should bring to a close litigation designed to secure basic science certificates for members of the naturopathic group without examination.

# President's Letter

## OUR STATE MEETING

OUR State Meeting will be held in Saint Paul on May 3, 4 and 5. The Program Committee has prepared an unusually good program in that the subjects to be discussed cover a variety of topics which will be of interest to general practitioners as well as to those limiting themselves to surgery, medicine, or a specialty. The first two days will deal with problems of routine practice, while the third day will be devoted exclusively to industrial medicine. Medical and surgical sections will be held separately for limited periods each day, following which joint sections will be held to hear symposiums or visiting speakers of prominence. Diagnostic clinics, demonstrations, scientific exhibits and question courts are included in the program with the hope that every member of the State Association will find something of personal interest and scientific value. Our Secretary and Staff and Local Committees are working tirelessly in order to assure us of a successful meeting.

The two innovations of this meeting are, first, a joint congress with the allied professions in which medical economics will be ably presented by national speakers, and secondly, a program on industrial medicine.

The State Meeting should be interesting and instructive. Plan to attend, and bring your wife along for she too will be welcome.

A. W. ADSON, M.D., President,

Minnesota State Medical Association.

# MINNESOTA STATE MEDICAL ASSOCIATION

## EIGHTY-FOURTH ANNUAL SESSION

MAY 2, 3, 4, 5, 1937

SAINT PAUL, MINNESOTA

Meeting Headquarters: Saint Paul Auditorium

### ANNOUNCEMENTS

**Register and Secure Your Badge** at the Registration Desk as soon as you arrive. Registration on Sunday will be at the Lowry Hotel. Registration for the remainder of the meeting will be at the Auditorium.

**The Congress of Allied Professions** will meet on Monday, May 3, at the Lowry Hotel. There will be joint sessions of the Allied Professions and the Minnesota State Medical Association at the Auditorium Theatre at 8 p. m. Registration badge of the Minnesota State Medical Association will entitle members to attend all sessions of the Congress of Allied Professions.

**Minnesota Medical Alumni Reunion:** The Medical Alumni of the University of Minnesota will meet for dinner in the Ballroom of the Lowry Hotel, Monday, May 3, at 5:30 P. M. The meeting will adjourn in time for members to attend the meeting of the Congress of Allied Professions at the Auditorium Theatre, 5th St. entrance. Purchase your tickets for the Alumni Dinner at the registration desk.

**Minnesota Society of Obstetrics and Gynecology** is sponsoring a Question Conference at 9:00, Monday morning, May 3. Anyone wishing to send in questions must have them in the Secretary's Office, 11 West Summit Avenue, St. Paul, before April 30.

**General Assembly:** The General Assembly is to be held on Wednesday, May 5, at 10:45 A. M. At this time there will be the Annual Report of the Secretary, the Installation of the Officers, and the Presentation of the Southern Minnesota Medical Association Medal for the best Scientific Exhibit.

**Railroad Rates:** Reduced First Class round trip fares at one-third reduction or 2 cents per mile, good thirty days from date of sale. Round trip tickets good in coach at 1.8 cents per mile which is a 10 per cent reduction. Tickets good for thirty days from date of sale. See your local railroad agent for exact railroad fares to St. Paul and return.

**Golf Tournament:** A Golf Tournament will be held at Midland Hills Country Club, on Monday, May 3, at 2:00 P. M. Numerous prizes have been offered. In addition, a blind bogey will be arranged. Make your reservations with Dr. Gust Edlund, 170 North Snelling Avenue, Saint Paul. A buffet supper will follow.

### LOCAL ARRANGEMENTS COMMITTEES

**General Chairman**—W. R. McCarthy

**Auditorium**—B. E. O'Reilly, H. F. Flanagan

**Golf**—Gust Edlund, J. M. Culligan, W. F. Hartfiel

**Hotel Reservations**—J. R. Meade, E. C. Gibbs, S. W. Shimonek

**Publicity**—J. A. Moga

**Reception**—G. E. Strate, H. F. Flanagan, M. O. Thoreson, and Sub-Committees.

**Reunion**—W. R. Shannon, E. C. Hartley, J. E. Holt

**Scientific and Technical Exhibits**—C. H. Mattson, W. G. Johanson, D. B. Peterson

### Business Program

Sunday, May 2

Lowry Hotel

9:00 A. M.—Council	Tahitian Room
3:00 P. M.—House of Delegates	Ball Room
4:30 P. M.—Reference Committees	
Scientific Committees:	
Medical Education	Silver Room
Miscellaneous	Colonial Room
Non-Scientific Committees:	
Officers and Council Reports	Blue Room
Constitution	Green Room
State Health Relations	Spanish Room
Lay Education	Spanish Room
Medical Economics	Spanish Room
5:00 P. M.—Council	Tahitian Room
7:30 P. M.—House of Delegates	Ball Room
How the Kansas City Profession is Meeting Social Security Problems	
E. H. SKINNER, President-elect, American Radium Society, Kansas City	
"Better Health" Activities	
OLIN WEST, Secretary, American Medical Association, Chicago	
<b>TUESDAY, MAY 4</b>	
11:30 A. M.—Council	Tahitian Room
<b>WEDNESDAY, MAY 5</b>	
General Assembly	
10:45 A. M.—Presentation of Officers	Auditorium Theatre

### Scientific Program

Monday, May 3, 1937

#### MEDICAL SECTION—Morning Session

8:00 A. M.

Presiding—A. H. BEARD

##### Chest Lesions and Tuberculosis Clinic

E. K. GEER, Saint Paul

D. G. GARDINER, Saint Paul

##### Pediatric Clinic

T. L. BIRNBERG, Saint Paul

##### Practical Application of Endocrine Therapy

E. H. RYNEARSON, Rochester

##### Hemolytic Anemia

C. J. WATSON, Minneapolis

##### Induced Fever

M. E. KNAPP, Minneapolis

#### SURGICAL SECTION—Morning Session

8:00 A. M.

Presiding—M. W. ALBERTS

##### Reconstructive Surgery Clinic

H. P. RITCHIE, Saint Paul

N. L. LEVEN, Saint Paul

##### End Results in the Treatment of Malignancy—Clinic

ARNOLD SCHWYZER, Saint Paul

## PROGRAM—EIGHTY-FOURTH ANNUAL MEETING

### Question Conference

R. D. MUSSEY, Rochester  
E. C. HARTLEY, Saint Paul  
J. C. LITZENBERG, Minneapolis  
J. R. MANLEY, Duluth  
C. B. MCKAIG, Pine Island  
L. M. RANDALL, Rochester  
J. L. ROTHROCK, Saint Paul

### SCIENTIFIC DEMONSTRATIONS AND EXHIBITS

10:00 A. M.

### GENERAL ASSEMBLY

11:00 A. M.

Presiding—A. W. ADSON

### Russell D. Carman Memorial Lecture—

Reflections Upon the Roentgenology of Fractures  
Minnesota Radiological Society, Sponsor  
E. H. SKINNER, Kansas City, President-elect, American Radium Society; Chancellor, American College of Radiology

### Citizens' Aid Society Memorial Address—

Irradiation Therapy of Tumors With a Consideration of the Possibility of Supervoltage X-rays  
ROBERT STONE, San Francisco, Associate Professor of Roentgenology, University of California; Director, Roentgenological Department, University of California Hospital

### MEDICAL SECTION—Afternoon Session

1:00 P. M.

### The Use of Mandelic Acid in Treating Infections of the Urinary Tract

E. N. COOK, Rochester

### Modern Medical Trends in Pediatrics

F. C. RODDA, Minneapolis

### Congenital Hypertrophic Pyloric Stenosis

O. W. ROWE, Duluth

### Immunization of Children Against the Common Diseases of Childhood

W. B. RICHARDS, St. Cloud

### Epilepsy

L. R. GOWAN, Duluth

### Arthritis

C. H. SLOCUMB, Rochester

### Medical Panel

W. A. O'BRIEN, Chairman, Minneapolis

### SURGICAL SECTION—Afternoon Session

1:00 P. M.

### Mistaken Diagnoses in Tumors of the Nose and Throat

L. R. BOIES, Minneapolis

### Acute Otitis Media and Mastoiditis—Some Observations

C. L. OPPEGARD, Crookston

### Visual Impairment Due to Neglect

F. E. BURCH, Saint Paul

### Sinusitis

K. R. FAWCETT, Duluth

### Indications for Newer Anesthetics

J. S. LUNDY, Rochester

E. B. TUOHY, Rochester

### Transurethral Resection

C. D. CREEVY, Minneapolis

### Treatment of Empyema

T. J. KINSELLA, Minneapolis

### Bladder Tumors

P. F. DONOHUE, Saint Paul

APRIL, 1937

### SCIENTIFIC DEMONSTRATIONS AND EXHIBITS

3:00 P. M.

### SYMPOSIUM ON PEPTIC ULCER

4:00 P. M.

Presiding—A. H. BEARD

### Physiologic Mechanisms in Relation to the Development of Peptic Ulcer

F. C. MANN, Rochester

### X-ray Diagnosis of Ulcer

R. W. MORSE, Minneapolis

### Medical Management

G. B. EUSTERMAN, Rochester

### The Surgical Treatment

D. C. BALFOUR, Rochester

### Panel on Peptic Ulcer

W. A. O'BRIEN, Chairman, Minneapolis

### CONGRESS OF ALLIED PROFESSIONS

8:00 P. M.

Tuesday, May 4, 1937

### MEDICAL SECTION—Morning Session

8:00 A. M.

Presiding—A. H. BEARD

### Clinic:

#### Use of the Gastroscope

A. C. KERKHOF, Minneapolis

#### New and Useful Drugs

R. N. BEITER, Associate Professor of Pharmacology, University of Minnesota

#### Pulmonary Embolism

J. S. McCARTNEY, Minneapolis

#### Applied Physiology of the Heart in Relation to Heart Failure

M. B. VISSCHER, Professor of Physiology, University of Minnesota

#### Serum Treatment of Pneumococcus Pneumonia

C. N. HENSEL, Saint Paul

#### Post-Institutional Care of the Insane

W. P. GARDNER, Fergus Falls

#### Prenatal Treatment of Congenital Syphilis

R. A. VONDERLEHR, Washington, D. C., Assistant Surgeon General U. S. Public Health Service

### SURGICAL SECTION—Morning Session

8:00 A. M.

Presiding—M. W. ALBERTS

### Clinic:

#### The Diagnosis of Hyperthyroidism

R. A. JOHNSON, Minneapolis

#### The Surgical Treatment of Hyperthyroidism

MARTIN NORDLAND, Minneapolis

#### The X-ray Treatment of Hyperthyroidism

ADAM SMITH, Minneapolis

#### Parathyroid Disease

R. M. JOHNSON, Minneapolis

#### Acute Condition of the Abdomen

A. E. SOHMER, Mankato

#### Carcinoma of the Breast

S. W. HARRINGTON, Rochester

#### Surgical Diseases of the Pancreas

O. H. WANGENSTEEN, Minneapolis

## PROGRAM—EIGHTY-FOURTH ANNUAL MEETING

Tuesday, May 4, 1937

### SCIENTIFIC DEMONSTRATIONS AND EXHIBITS

10:00 A. M.

### GENERAL ASSEMBLY

11:00 A. M.

Presiding—H. W. GOEHR

#### Important Injuries About the Eyes

JOHN M. WHEELER, New York, Professor of Ophthalmology, Columbia University

#### Hypertensive Heart Disease—Its Clinical Pathological Manifestations

FRANCIS D. MURPHY, Milwaukee, Professor of Medicine and Director of the Department of Medicine, Marquette University  
Northern Minnesota Medical Association, Sponsor

### GENERAL ASSEMBLY ON MEDICAL ECONOMICS

1:30 P. M.

Presiding—A. W. ADSON

#### The Doctor Looks at Social Security

MAXWELL J. LICK, Erie, Pa., President, Medical Society of the State of Pennsylvania

#### Medical Care for All Americans

NATHAN B. VAN ETEN, New York, Speaker of the House of Delegates, A. M. A.

#### Our Professional Future

MORRIS FISHBEIN, Chicago, Editor, *Journal of the American Medical Association*

### SCIENTIFIC DEMONSTRATIONS AND EXHIBITS

3:00 P. M.

### MEDICAL SECTION—Afternoon Session

4:00 P. M.

Presiding—A. H. BEARD

#### Protein Deficiency Edema

S. H. BOYER, Jr., Duluth

#### The Clinical Test for Pregnancy

D. E. MOREHEAD, Owatonna

#### Sterility

J. A. URNER, Minneapolis

#### Cosmetic Dermatitis

F. W. LYNCH, Saint Paul

### SURGICAL SECTION—Afternoon Session

4:00 P. M.

Presiding—M. W. ALBERTS

#### Acute Appendicitis

J. F. NORMAN, Crookston

#### Fissure in Ano

W. A. FANSLER, Minneapolis

#### Hernia, "The Kettle or the Pot?"

B. J. GALLAGHER, Waseca

#### Surgical Panel

W. A. O'BRIEN, Chairman, Minneapolis

### INDUSTRIAL DINNER

6:30 P. M.

Lowry Hotel Ballroom

Presiding—A. W. ADSON, President

#### Address of Welcome—

GOVERNOR ELMER A. BENSON, Saint Paul

#### President's Address—

A. W. ADSON, Rochester

#### Prompt Reporting and Cooperation with Commissions

MR. VOYTA WKBETZ, Madison, Chairman of the Industrial Commission of Wisconsin

### PUBLIC HEALTH MEETING

(Open to the General Public)

8:00 P. M.

*Auditorium Theater*

#### The Child and the Physician

REVEREND ALPHONSE M. SCHWITALLA, S.J., Saint Louis, Dean of the St. Louis University School of Medicine, and President of the Catholic Hospital Association

#### The Medical Citizen

N. B. VAN ETEN, New York, Speaker of the House of Delegates of the American Medical Association

#### What the Public Can Do in the Present Campaign for Control of Syphilis

R. A. VONDERLEHR, Washington, D. C., Assistant Surgeon General, U. S. Public Health Service

#### Quacks of the Year

MORRIS FISHBEIN, Chicago, Editor, *Journal of the American Medical Association*

Wednesday, May 5, 1937

### NORTHWEST INDUSTRIAL MEDICAL CONFERENCE

Presiding—A. W. ADSON and D. P. HEAD

#### Address of Welcome

MR. F. T. STARKEY, Saint Paul, Chairman, Minnesota Industrial Commission

#### Back Injuries

J. R. KUTH, Duluth

#### Adequate and Inadequate Treatment of Head Injuries

W. MCK. CRAIG, Rochester

#### Fracture Dislocation of the Shoulder

H. W. MEYERDING, Rochester

#### Differential Diagnosis in Acute Abdominal Tragedies

MAXWELL J. LICK, Erie, Pa., President, Medical Society of the State of Pennsylvania

#### Hand and Wrist Injuries

WALLACE COLE, Saint Paul

### SCIENTIFIC DEMONSTRATIONS AND EXHIBITS

10:00 A. M.

### GENERAL ASSEMBLY

10:45 A. M.

Presiding—A. W. ADSON, President

#### Report of the Secretary

#### Installation of Officers

#### Presentation of the Southern Minnesota Medal

#### Pitfalls in the Management of Hand Infections

MICHAEL L. MASON, Chicago, Associate Professor of Surgery, School of Medicine, Northwestern University

#### Injuries to the Thigh

B. S. ADAMS, Hibbing

(Continued on Page 260)

## ◆ OF GENERAL INTEREST ◆

Dr. L. E. Claydon of Red Wing, Minnesota, has returned from a several weeks' trip to foreign countries.

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Dr. A. D. Haskell was elected mayor of Alexandria at the recent city election, polling a large majority of votes.

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Dr. W. H. Nuese of Springfield has been elected president of the local chapter of the American Red Cross.

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Dr. William H. Rumpf of Faribault, who has been seriously ill with pneumonia, is reported greatly improved.

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Dr. U. Schuyler Anderson has moved from Austin to Minneapolis, where he has opened offices at 350 Medical Arts Building.

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Dr. John Lohmann of the state hospital staff, Fergus Falls, has resigned his position there and moved to Jasper, Minnesota, where he will engage in general practice.

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The Minnesota Society of Internal Medicine will meet in Minneapolis, Monday, May 24, 1937. Dr. Cecil Watson, University Hospital, Minneapolis, is chairman of the Program Committee.

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Dr. Leila Gorenflo, a graduate of Rush Medical College who recently completed her internship at the Los Angeles County Hospital and the State Sanatorium at Ah-Gwah-Ching, has opened offices for practice at Cass Lake.

\* \* \*

The American Medical Golfers' Association will hold its twenty-third annual tournament at Seaview Country Club, Atlantic City, Monday, June 7, 1937, in connection with the annual American Medical Association meeting. Application blanks may be obtained from Wm. J. Burns, 2020 Olds Tower, Lansing, Michigan.

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Dr. David M. Parker, who recently opened offices for practice in Mountain Iron, has been appointed village health officer. Dr. Parker is a graduate of the University of Minnesota and served three years as an army physician, followed by establishment of a practice in Virginia, Minnesota, before moving to Mountain Iron.

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Dr. C. W. Lundquist, who has been assistant to Dr. E. K. Rowles at the Rood Hospital in Coleraine, has been transferred to the Rood Hospital in Hibbing. Dr. Richardson, for the past year house physician at the General Hospital in Minneapolis, will take Dr. Lundquist's place at the hospital in Coleraine.

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Dr. Frank A. Krusen, Dr. Louis J. Stuhler and Dr. Lawrence M. Randall, all of the Mayo Clinic, Rochester, attended the first international conference on fever therapy held in New York March 30 and 31 at the Hotel Waldorf-Astoria. On the final afternoon of the

conference they discussed "Fever Therapy Plus Additional Local Heating in the Treatment of Gonorehal Infections."

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Dr. George E. Cardle of Brainerd has become associated in practice with Dr. E. F. Jamieson of that city. Dr. Jamieson is now in Chicago taking postgraduate work in ophthalmology and otolaryngology at the University of Illinois, College of Medicine. Upon Dr. Jamieson's return he will specialize in eye, ear, nose and throat ailments.

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### Bemidji Passes a Fracture Resolution

The following resolution was presented by Dr. D. H. Garlock to the Board of Health on February 25, 1937, and was unanimously approved. Copies of the same were placed on file with the City Clerk of the City of Bemidji.

#### RESOLUTION:

(Attendant—splints required.) No person, firm or corporation shall operate or cause to be operated any ambulance, public or private, or any other vehicle commonly used for the transportation or conveyance of the sick or injured, without having such vehicle equipped with a set of simple first aid and splint appliances approved by the Board of Health and having in attendance at all times such vehicle is in use, a person who has obtained a certificate of fitness as an ambulance attendant from the Board of Health.

Any person desiring a certificate as an ambulance attendant shall make application in writing therefor to the Board of Health. Before the issuance of any such certificate the applicant therefor must present evidence of his qualifications to fill such position and must demonstrate to the satisfaction of the board of health his ability to render emergency first aid and to apply approved splints to arm and leg fractures.

This resolution shall take effect and be in force thirty days after the above date.

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### Opening for Physicians and Clinical Pathologist

For the second time in a month, the California State Personnel Board has waived residence requirements in its search for qualified medical men, and is holding an examination which will be open to candidates in all parts of the United States. The position for which the new examination is being given is that of Physician and Clinical Pathologist, paying a salary of \$200 a month plus maintenance for the doctor and his family. The position involves work in the various institutions operated by the State of California.

To be qualified to take the examination, physicians must have a license to practice medicine in the State of California or be able to secure one, and must be graduates of an approved medical school with three years of experience in the licensed practice of medicine with specialization in clinical pathology, bacteriology, and serology, or some other equivalent combination of education and experience. Age limits for candidates are twenty-six to fifty years. Applications must be filed with the California State Personnel Board, Sacramento, California, before April 24, as the examination will be held May 1.

## HOSPITAL NEWS

Dr. Donald McCarthy was elected president of the Board of Advisers of Franklin Hospital at the annual meeting held the latter part of February. Dr. F. G. Benn was elected vice president and Dr. A. E. Cardle, secretary of the Board.

Dr. Clifford Erickson of Fertile, Minnesota, has become associated with the State Hospital at Fergus Falls and will fill the vacancy on the staff occasioned by the resignation of Dr. John Lohmann who has entered private practice at Jasper, Minnesota.

A new addition is to be made this spring to the hospital operated by Dr. V. H. Gardner at Fairmont, increasing the number of rooms by five.

Two associate physicians have been added to the staff of the United States Veterans Hospital at St. Cloud. Dr. G. J. Dobyns of Phoenix, Arizona, and Dr. Eugene R. Inwood of Medford, Oregon, will undergo the usual training for associate physicians entering veterans hospital service.

The installation of new equipment and changes in personnel of the nursing staff have recently been made at Community Hospital, Farmington. A delivery room with new equipment is to be added later, also new oxygen apparatus and fracture bed. Miss Alice Schertz has been named superintendent of the hospital.

STATE MEETING PROGRAM  
(Continued from Page 258)

## NORTHWEST INDUSTRIAL MEDICAL CONFERENCE

1:00 P. M.

Presiding—M. W. ALBERTS

## New Automobiles and New Fractures

H. B. MACEY, Rochester

## Peripheral Nerve Injuries

A. A. ZIEROLD, Minneapolis

## Review of the Treatment of Burns

R. F. McGANDY, Minneapolis

## Certain Derangements of Knee Joint

C. C. CHATTERTON, Saint Paul

## Treatment of Os Calcis Fractures

O. W. YOERG, Minneapolis

## Physical Therapy in Relation to Industrial Medicine

F. H. KRUSEN, Rochester

## Industrial Panel

A. W. ADSON, Chairman, Rochester

Accident statistics show that the most dangerous place in an automobile is the seat beside the driver. Divorce Court records prove it to be a dangerous place, too.

## REPORTS AND ANNOUNCEMENTS OF SOCIETIES

## International Hospital Association

The fifth Congress of the International Hospital Association will meet in Paris, July 5 to 11, 1937. The Congress will be addressed by members from France, Switzerland, Germany, England, Canada and the United States on matters pertaining to hospitals. Members of the Association will pay a fee of 60 francs, non-members 100 francs, while "observers" tickets not entitling holders to participate in discussions may be obtained for 30 francs. Numerous study and sight-seeing tours have been arranged in connection with the Congress.

For information address M. A. Chenevier, Secrétaire General, 3 avenue Victoria, Paris (4e Arr.), France.

## Kandiyohi-Swift-Meeker County Society

The March meeting of the Kandiyohi-Swift-Meeker County Medical Society was held at the Lakeland Hotel, Willmar, on Wednesday the 10th, at six-thirty.

Dr. Kenneth Buckley, of Minneapolis, guest speaker, presented the subject, "Orthopedic Problems of the General Practitioner." Dr. Buckley, in addition to being an outstanding man of his branch of medicine, is a devotee of the great out of doors, and a hunter of big game in the wilds with both gun and camera. As an after part of his talk, he told of a trip in the seldom visited places of the Canadian Rockies and illustrated his remarks with stereopticon views.

## Minneapolis Surgical Society

Executive officers and two directors were elected at the meeting of the Minneapolis Surgical Society held March 4 as follows: Dr. Otto W. Yoerg, president; Dr. E. A. Regnier, vice president; Dr. Harvey Nelson, secretary-treasurer, and Dr. Daniel A. MacDonald and Dr. William A. Hanson, executive council members.

## Wabasha and Winona [Counties] Joint Meeting

The sixth annual joint meeting of the Wabasha and Winona County Medical Societies and the twelfth annual dinner tendered by the Sanatorium Commission to the physicians of the counties served, was held at Buena Vista Sanatorium, Wabasha, Monday evening, March 8.

There were twenty-nine in attendance, including Winona and Wabasha County physicians, officers of the State Medical Association, members of the Sanatorium Commission, and invited guests. Dr. B. A. Flesche, president of the Wabasha County Medical Society, acted as toastmaster.

The following program was presented:

"Problems of the Minnesota State Medical Association"—Dr. A. W. Adson, president, M.S.M.A.

"Our Relation to the Social Security Problem"—Dr. E. A. Meyerding, secretary M.S.M.A.

## WOMAN'S AUXILIARY

"The Nervous Patient," by Dr. A. E. Meinert, Winona.

"Present Trends in the Diagnosis and Treatment of Tuberculosis" with demonstration of films—Dr. F. F. Callahan, medical director of Pokegama Sanatorium.

"The Management of Essential Hypertension: Conditions and Indications for Surgical Treatment"—Dr. A. W. Adson, Mayo Clinic.

The program was planned and arranged by Dr. Russell H. Frost, superintendent and medical director of Buena Vista Sanatorium.

After considerable correspondence and several visits to auxiliaries, I appreciate, as never before, the difficulties of the smaller auxiliaries, and I congratulate them on the fine way they have carried on.

In some auxiliaries, a closer coöperation among the women would be especially desirable. In such cases I think auxiliary members should make an extra effort to work together. For one afternoon a month, let us all make the most of our common interests for the good of the one thing all of us have in common—the Medical Profession.

The doctors have asked us to coöperate with the Cancer Committee of the Minnesota State Medical Association by supporting the Women's Field Army for the control of cancer.

Arrangements are progressing for the Annual Convention in May, and it is not too early to plan for the exhibits, which we hope will be better than ever before. We urge you to come to St. Paul in May and plan (if a doctor's wife can plan) to be present all three days at the convention. There will be instructive and worthwhile meetings, and an enjoyable social program is being planned by the Ramsey County Auxiliary, who will extend to you a very warm welcome.

DOUGLAS HAMMES

## WOMAN'S AUXILIARY

Mrs. E. M. Hammes, President,  
1456 Summit Avenue, Saint Paul

Mrs. A. A. Passer, Editor, Press and Publicity, Olivia

THE Midwinter Board Meeting of the Woman's Auxiliary was held at the Y.W.C.A. in Minneapolis, February 27. Mrs. E. M. Hammes presided at the business session which included reports of officers, chairmen, and county presidents. Thirty board members from various points in the state were in attendance. Mrs. E. V. Goltz, president of Ramsey County, reported that about \$155.00 had been made on the series of play reviews given under the direction of Mrs. Herman Kesting. Ramsey County Auxiliary held a Public Relations Tea on March 22 to which eighty-eight officers of lay organizations were invited to be guests of the Auxiliary. Hennepin County Auxiliary will sponsor a Card Party Luncheon on Easter Monday in the library of the Medical Arts Building in Minneapolis.

A nominating committee for the annual meeting election in May was elected by the Board Members as follows: Mrs. A. A. Passer, Olivia; Mrs. Martin Nordland, Minneapolis; Mrs. G. T. Nordin, Minneapolis; Mrs. S. S. Hesselgrave, St. Paul; and Mrs. F. J. Elias, Duluth.

Speakers at the luncheon following the business session were Dr. J. L. McLeod of Grand Rapids, State Senator for the 52nd District, whose topic was "A Glimpse at Legislative Problems," and Mrs. Harlow Hanson of Minneapolis, Commander of the State Cancer Committee for the Women's Division.

Plans for the Annual State Meeting to be held in Saint Paul in May were outlined by the State President, Mrs. Hammes.

## MESSAGE TO THE MEMBERS OF THE STATE MEDICAL AUXILIARY

The occasion of our mid-winter Board meeting is a good opportunity to look forward and backward, and generally to take stock of our auxiliary year.

In my opinion, the auxiliaries are doing splendid work, increasing their membership, increasing their subscriptions to *Hygeia*, entertaining conventions, and giving liberally to various medical charities.

APRIL, 1937

## COUNTY AUXILIARIES

### Mower County

Regular meetings of this Auxiliary are held once a month. After the business session the members fold surgical dressings for the hospital. Money has been earned through the sale of magazines. A card party netted the Auxiliary sixty dollars. This year a surgical light was bought for the St. Olaf Hospital. The April meeting will begin with a luncheon at the New Austin Hotel. Mrs. P. A. Lommen is president and is assisted by Mrs. J. J. Morrow, vice president; Mrs. Paul Leck, secretary, and the treasurer Mrs. J. K. McKenna.

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### St. Louis County

Two subscriptions to *Hygeia* were given to the Library by the Auxiliary at the January meeting. A report of the Philanthropic work was given by Mrs. W. A. Coventry who told of the baskets that were given to the poor at Christmas. The meeting was held at the home of Mrs. Eckman on London Road with Mrs. H. S. Forbes, president, presiding.

Mrs. D. W. Wheeler gave a talk on "Marionettes in Occupational Therapy." The talk was illustrated by marionettes made by Mrs. Wheeler. The February meeting was a valentine party held at the Lincoln Hotel.

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### Washington County

Mrs. E. M. Hammes, state president, was the speaker at the regular Auxiliary meeting held on February 9, at the home of Mrs. R. J. Josewski, in Stillwater. Mrs. R. J. Josewski, who is state treasurer, attended the board meeting in Minneapolis in February, also Mrs. D. Kalinoff and Mrs. J. H. Haines of Stillwater.

## PROCEEDINGS of the MINNESOTA ACADEMY of MEDICINE

### Meeting of February 10, 1937

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, February 10, 1937. Dinner was served at 7 o'clock and the meeting was called to order at 8 o'clock by the president, Dr. E. M. Jones.

There were forty-two members present.

Dr. S. Marx White read the following memorial of the Necrology Committee:

#### Richard Olding Beard

RICHARD OLING BEARD was born December 20, 1856, at Tollington Park, Middlesex, England, the son of Richard and Anne Beard. His father was a manufacturer. He was educated at Camden House Academy, Brighton, England, and came to the United States in 1869, settling first in Chicago. He was engaged as book buyer and stock clerk for two large book concerns for a period of about eight years. Graduated from the Department of Medicine of the Northwestern University in 1882, he came at once to Minneapolis, Minnesota, where he engaged in the active practice of medicine. He was Assistant Commissioner of Health from 1886 to 1889.

He was one of the founders of the Medical School of the University of Minnesota in 1888 and took an active part with Dean Frank Fairchild Wesbrook in the movement which resulted in the unification of medical teaching in this state at the University of Minnesota in 1908. He was Secretary of the Faculty of the Medical School from 1888 to 1903 and from 1906 to 1925, and was Head of the Department of Physiology from 1888 to 1912. Holding the Professorship of Physiology in the Medical School from 1888 to 1925, he retired from active teaching in the latter year, becoming Professor Emeritus. He founded the School of Nursing at the University of Minnesota in 1909. This was the first true University Nursing School. He was active in the organization of the Central School of Nursing at the University of Minnesota in 1921, uniting the nursing services of four major hospitals with the school. He also initiated movements to establish endowment funds for the Nursing and Medical Schools of the University.

Upon retirement from active duty in the University, he was engaged in the direction of public health work, serving as Executive Secretary of the Health Council of the City of Minneapolis and the County of Hennepin from 1925 to 1932. During a part of this time, also, he was active as chairman of a voluntary committee for the promotion of legislation to establish a psychopathic hospital at the Medical School. Upon retirement in 1932 from public health work, he devoted himself to writing. His death cut short a monumental task to which he had laid his hands, that of writing a history of the Mayo Clinic. During the early part of his active life he wrote many articles for medical journals and later gave addresses on medical and nursing education

and in public health interests in thirty-four states of the Union.

His relation to the Minnesota Academy of Medicine is of interest at this point. He was a Charter Member in the organization, founded in 1887. There is some question as to whether there were 37 or 38 charter members, but there is no question as to his status as he served as the Minneapolis Secretary until October, 1889. During this same period Dr. E. C. Spencer served as Secretary for St. Paul. By October, 1889, co-secretaries seemed to be no longer necessary and Dr. Beard was elected Secretary Treasurer, an office he filled until October, 1903, when he was succeeded by Dr. Arthur W. Dunning. On October 3, 1906, he was elected President and his presidential address, read at the meeting of November, 1906, was entitled: "The Relation of Physiological Chemistry and Physiological Microscopy to Medical Practice." Indicative of the character of his interests are the titles of the first two papers he read before the Academy, the first on June 1, 1889, on "The Causes of Infant Mortality" and the next in 1891, on "Physiology of Sleep and the Physiological Treatment of Insomnia." Dr. Beard was elected to honorary membership in the Academy on April 15, 1925.

He was a member of Alpha Kappa Kappa fraternity; honorary member of Hennepin County Medical Society, Minnesota State Medical Association, State Organization of Public Health Nursing; Fellow of the American Medical Association and the American Public Health Association; member of the American Hospital Association; honorary Fellow (formerly Secretary, Vice-President and President) of the Minnesota Academy of Medicine; and an honorary member of the National League of Nursing Education.

Dr. Beard stood foursquare for everything in which he believed. He was a trenchant speaker and fluent writer with an unusual command of the English language. His many students remember well his clean-cut characteristics of speech and action. He took an effective part in the movement which resulted in the affiliation of the Mayo Foundation with the University. Following that, he became the outstanding leader in the development of nursing education in Minnesota, a leadership which has had its effects far beyond the confines of this state. Dying just a few months short of his eightieth birthday and invalided for the greater part of the last year and a half of his life, he was unable to complete his last great wish—that it might be he who should write the first real history of the Mayo Clinic and its founders. His initiative, unremitting energy and determination were an example to all.

The Committee:

J. F. CORBETT,  
H. L. ULRICH,  
S. MARX WHITE, Chairman

The scientific program followed.

## PROCEEDINGS OF MINNESOTA ACADEMY OF MEDICINE

### SPINAL CORD TUMOR

E. M. HAMMES, M.D.

*Saint Paul*

Dr. Hammes reported two cases of spinal cord tumor: (1) a typical textbook case, and (2) a most atypical case with rapid onset, a remission of several months, and a sensory level four dorsal segments lower than the tumor mass.

*Case 1.*—The patient was a female, aged thirty-five, and was referred to us by W. C. Carroll, St. Paul, on December 12, 1935. The family and personal histories were negative except for an appendectomy at the age of 23 and a cholecystectomy at the age of 28.

In July, 1934, she began to have pain in the upper right abdominal quadrant. This manifested itself only at night while lying down. Because of continued pain and loss of sleep she lost 28 pounds during the following year. About July, 1935, one year after the onset of her pain, she noticed a slight stiffness in her knees and ankles. Her gait gradually became unsteady, especially when walking in the dark or with her eyes closed. This stiffness was more pronounced in her right leg. About this time she noticed some numbness in her toes which gradually extended upward to the level of the knees. During the early part of November the right leg began to tire easily, and the knee and ankle had a tendency to "give way." There had been some edema of both ankles since the middle of October.

The pain continued, was aggravated by coughing and sneezing, and on November 3, 1935, an exploratory laparotomy was performed under spinal anesthesia. Numerous dense adhesions were severed, but the pain continued.

Neurologic examination on December 12, 1935, revealed the following: Cranial nerves and upper extremities negative except for a slight intention tremor of the right arm. The Romberg was positive with a tendency to fall to the right. She walked with difficulty and with a definitely spastic gait. Both lower extremities were definitely spastic, the right more marked than the left. Both knee jerks were markedly increased with a bilateral patellar clonus. Both ankle jerks were definitely increased with a bilateral ankle clonus. There was a bilateral Babinski. While lying down she was able to execute the movements with the left leg more readily than with the right leg. There was a bilateral ataxia with the knee-heel test. This she executed with the right leg with great difficulty. There was no evidence of muscle atrophy, but slight edema with definite pitting of both ankles. The lower abdominal reflexes were absent; the upper ones were questionable. Sensation was normal over the face, both upper extremities, and the chest. On the right side about two inches above the umbilicus there was a band about one inch wide extending around the right upper abdomen. This band was somewhat hyperesthetic to touch and pain as compared to the left side. Below this there was a small band where touch and pain and temperature sense were quite normal. Immediately below this about

one inch above the umbilicus and from there down over the remainder of the right trunk and right leg, touch, pain and temperature sense were somewhat impaired but could be definitely recognized. Over the anterior surface of the right thigh to a short distance below the knee there was an indefinite area of hyperesthesia where pin pricks were quite painful. Over the left trunk from the level of the umbilicus, and over the entire lower left extremity, touch, pain and temperature sense were impaired but could be recognized. Position and deep muscle sense were lost in both lower extremities. Vibratory sense was lost over both ankles and both knees, with some impairment on the pelvic brim.

Her hemoglobin was 78 per cent; blood pressure 122/74; urine normal. The blood Wassermann reaction was negative.

On January 6, 1936, a lumbar puncture was performed. The spinal fluid pressure was 14 mm. of mercury with some evidence of block. The spinal fluid presented a Nonne Froin syndrome. It was xanthochromic and coagulated to a solid mass within thirty minutes. The Wassermann and colloidal gold tests were negative. Because of the spontaneous coagulation, no further tests could be made. There was no change in her symptoms following the lumbar puncture.

Roentgenologic studies of the spine were negative.

A diagnosis of non-malignant intradural extramedullary cord tumor, located on the right side at the level of the eighth dorsal segment, was made. On January 27, 1936, a laminectomy was performed by Dr. Carroll, and a tumor was found at the level of the eighth dorsal segment, intradurally and attached to the meninges. This was easily removed. It was the size of a large hazelnut.

The microscopic diagnosis was a meningioma. The patient made an uneventful convalescence.

Examination on March 6, 1936, was entirely negative except for some hyperesthesia over both thighs and some subjective complaint of stiffness of the toes.

*Case 2.*—A male, aged thirty-six, a farmer, was referred to us by Drs. Kalinoff and Brekke, Stillwater, Minnesota, on October 25, 1935.

The family and personal histories were essentially negative.

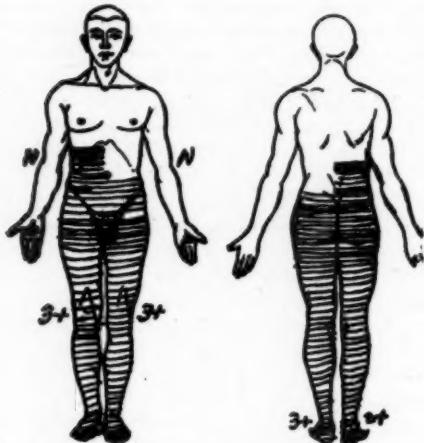
In October, 1934, the patient developed some pain in his left hip. This was constant for a week and then subsided. About two weeks later he developed marked attacks of flatulence and belching. This continued and on November 17, 1934, an appendectomy was performed, without relief. When he began to get about following the operation he noticed some weakness in his legs, especially the right one. He also had some involuntary urination which subsided in two weeks. The weakness in his lower extremities gradually grew worse. About January, 1935, both legs had become so weak and spastic that he was unable to walk without assistance. He also had a return of his involuntary urination. This continued until about May, 1935. He began to improve so that during July, August and September, he was

PROCEEDINGS OF MINNESOTA ACADEMY OF MEDICINE

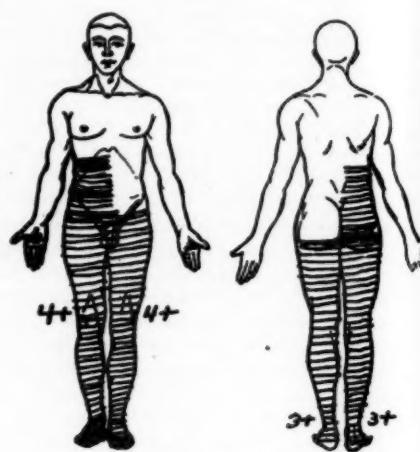
able to attend to his work on the farm, plow, run a mower, and walk over a mile daily. Early in October, 1935, he had a rapid return of his symptoms. His lower extremities became spastic with occasional involuntary

there was some sensory impairment. Over this area the prick of a pin gave him a burning feeling.

A lumbar puncture was performed on October 20 and revealed the following: The spinal fluid was clear,



Case 1. Sensation: Over dark band—hypersensitivity. Over shaded area—tactile, pain and temperature sense impaired. Deep muscle and vibratory sense lost.



Case 2. Sensation: Over shaded area—tactile, pain, temperature, vibratory and deep muscle sense are impaired.

jerks, so that he was unable to walk without assistance. He was unable to void and had to be catheterized. There was no pain at any time.

About October 20, 1935, Dr. Kalinoff performed a lumbar puncture. The spinal fluid was yellowish, the Kolmer and Kline were negative, colloidal gold curve 1233443211.

The neurologic examination on October 26, 1935, revealed the following: The pupils were equal and round and responded to light and accommodation. The fundi were normal. The fields of vision were normal on rough testing. The eye movements were normal and there was no nystagmus. All other cranial nerves were normal. Both upper extremities showed normal reflexes, normal sensation, normal muscle strength, no ataxia, and no tremors. We were unable to test the Romberg because he was so spastic and was unable to stand alone. Both lower extremities were markedly spastic with an occasional jerking of the musculature. There was a bilateral ataxia with the knee-heel test. Both knee jerks were markedly increased, with a patellar clonus. Both ankle jerks were markedly increased and there was a bilateral ankle clonus. There was a bilateral Babinski. There was no evidence of atrophy or other trophic changes. He was unable to walk without a cane. The abdominal and cremasteric reflexes were absent. Sensation was normal in the face, both upper extremities, and the upper portion of the trunk. From two inches above the umbilicus on the right side over the right half of the abdomen and the entire right leg, touch, pain, position, and deep muscle sense were impaired. On the left side from the level of Poupart's ligament down over the entire left leg

pressure 8 mm. of mercury, no evidence of block; 6 cells, a positive globulin, a negative Wassermann, and a colloidal gold curve 1234221000. Quantitative protein 150 mg. per 100 c.c. All other laboratory findings and roentgenologic studies of the entire spine were negative.

Because of the high protein content, an intramedullary cord tumor was considered, but, in the absence of a spinal block and with the history of a marked remission during the summer of 1935, a diagnosis of multiple sclerosis was made. He was placed on quinine hydrochloride and triple typhoid vaccine. His bladder condition improved considerably, but there was no change in his sensory or motor symptoms. Within a month he had a return of his bladder symptoms.

On January 10, 1936, the spinal fluid was yellowish, there was some evidence of block, and the quantitative protein was 100 mg. per 100 c.c. The sensory level remained constant, and a diagnosis of an intramedullary cord tumor at the level of about the seventh dorsal segment was made.

On January 22, 1936, Dr. Robert Earl performed a laminectomy, removing the fourth, fifth and sixth dorsal spinous processes. The cord appeared anemic, there was no pulsation, but no evidence of tumor or obstruction could be found. Because of the marked hemorrhage, further exploration seemed inadvisable.

The patient had an uneventful convalescence but no improvement in his symptoms.

On March 6, 1936, Dr. Earl performed another laminectomy and removed the second and third dorsal spinous processes. At the level of the fourth dorsal segment under the second dorsal spinous process an in-

PROCEEDINGS OF MINNESOTA ACADEMY OF MEDICINE

tramedullary tumor about the size of a hazelnut was found. This was infiltrating and could not be removed. A small biopsy revealed that the tumor was a glioma. The surgical recovery was uneventful, and there was no improvement in his symptoms. The patient is still alive.

**Discussion**

**DR. H. Z. GIFFIN** (Rochester): I would like to ask Dr. Hammes how often he sees a cord tumor that does not cause pain which is relieved by moving around at night?

**DR. HAMMES:** The pain is relieved when the patient sits up and aggravated while in the recumbent posture, because in the sitting posture the tension of the posterior roots is lessened, due to the slight flexion of the vertebral column. This relief I believe occurs only in cord tumors so located that they produce some direct pressure on the posterior sensory roots.

**DR. GIFFIN:** What percentage of spinal cord tumors do not have that symptom?

**DR. HAMMES:** I cannot give the percentage, but we see many cord tumors in which a change of position has very little effect, if any, on the pain itself.

**DR. S. MARX WHITE** (Minneapolis): Do you frequently find cases in which the tumor is located in the upper dorsal segments and the sensory level indicates a much lower dorsal segment lesion, such as occurred in your second case?

**DR. HAMMES:** The marked difference between the sensory level and the location of the tumor is quite infrequent. In the second case the tumor was small and intramedullary. The main pressure was probably exerted on the long posterior fibers, while the laterally placed sensory fibers escaped. The more centrally placed fibers, i.e., those nearer the posterior septum, control sensation in the lower portion of the trunk and lower extremities. This may explain the marked difference between the sensory level and the tumor in this case.

**DR. WILLIAM DAVIS** (Saint Paul): I was interested in what Dr. Hammes said about lying down increasing the pain, and that the pain was better during the daytime, and that it was due to pulling on the sensory roots. Wouldn't that explain what I have noticed in several cases of herpes zoster, that the patients have less pain when upright, especially in cases of herpes zoster where the dorsal or lumbar nerves are affected?

**DR. HAMMES:** I do not know, but that would seem a logical explanation.

**DR. W. H. HENGSTLER** (Saint Paul): One of the interesting things about that second case was that the man showed early bladder involvement. That is an interesting point in the diagnosis of intramedullary tumors. They frequently show bladder involvement before anything else. I think it is an important thing that he had bladder involvement early in the disease, from the diagnostic standpoint.

**A SUGGESTION IN THE TECHNIC OF CHOLECYSTECTOMY FOR THE COMPLICATED CASE OF GALLBLADDER DISEASE**

HARRY P. RITCHIE, M.D.

*Saint Paul*

Dr. Harry P. Ritchie, of Saint Paul, read a paper on the above subject, and showed lantern slides of the technic of the operation.

**Abstract**

A plan for removal of the gallbladder was suggested for those cases wherein a risk of injury to structures about the gallbladder is possible in the attempt at cholecystectomy by the formal up-down or down-up methods of procedure.

The first step is to split the gallbladder by a median incision, a distance from the dome to a point where the opening of the cystic duct is identified from within. The second step is to "wing" the gallbladder by two parallel incisions made in the same direction as the first, and far enough away from the normal attachments of the gallbladder to the liver to preserve them completely. The "wings" of the gallbladder are removed. These two steps leave a situation which can be pictured as a ladle, the handle of which is the strip of the gallbladder wall with its mucous membrane lining and its normal attachments to the liver; the cup of the ladle is the mucous-membrane-lined base of the gallbladder. The third step is the dissecting of the mucous membrane of the handle and the cup away from the wall, thus removing the mucous membrane entirely. The fourth step is the suturing of the wall of the cup about a drainage tube and the suturing of the wall of the handle to diminish raw surfaces and control bleeding.

The main objection to the plan is that, by opening the gallbladder so widely, infectious agents are released upon the peritoneum. This is a valid objection, which the surgeon must consider in each case on the question of cholecystotomy and drainage on the one hand, or the attempt to remove the gallbladder by formal methods under difficult and dangerous circumstances.

The justification for the procedure is found in the studies of Andrews on the infectious nature of the gallbladder contents. Andrews questions the appropriateness of the term "empyema of the gallbladder." His studies fit into the clinical experiences of the writer in sixteen cases of cholecystectomy performed by the above-described method over a period of fifteen years. In this small series of selected cases, the mortality has been nil. In only one case was there postoperative concern; the story of this case was reported in detail.

Emphasis was made in the plea that such unusual surgery should not be interpreted as a substitute for formal steps, but was offered only as an emergency procedure in certain combinations of circumstances. The plan meets the surgical principle of any cholecystectomy, which is the removal of the mucous membrane of the gallbladder, and eradicates the danger of injury to the

## PROCEEDINGS OF MINNESOTA ACADEMY OF MEDICINE

common duct and traumatism to and exposure of denuded surfaces of the liver.

### Discussion

DR. E. M. JONES (Saint Paul): Dr. Ritchie's paper is very interesting. These severe gallbladder cases often give the surgeon a great deal of concern. I recall two cases in particular, in which it would have been wiser to have followed some such procedure. In doing a cholecystectomy, the clamps applied to the cystic duct cut through. It was necessary to apply the clamps to the cystic artery and the cystic duct and leave the clamps in situ. Fortunately, both of these patients recovered.

DR. RITCHIE (in closing): There are causes of obstruction of the biliary ducts other than surgical traumatism, but the surgeon is challenged when this condition follows operation. There are procedures in the literature which remove most of the wall and mucous membrane, leaving a part of the gallbladder with the normal attachments to the liver, just as I have illustrated. Thorek does so, then destroys the mucous membrane of the handle and cup with the endotherm, brings over the falciform ligament and sews it to the outer margin of the handle. Raymond McNealy iodinizes the mucous membrane after winging the gallbladder and uses the ligament to protect the peritoneal cavity. Denegre Martin, of New Orleans, in 1921 and again in 1926, reports a series of cases treated along similar lines. All of them report satisfactory recoveries. When I read their reports, I wonder whether I have made a mountain out of a molehill. But I believe the surgical dissection of the mucous membrane is founded on proper principle. As I pointed out in the paper, what I suggest is that an old gynecological operation be applied to the complicated case of gallbladder disease.

## MALIGNANT HYPERTENSION

MOSES BARRON, M.D.  
Minneapolis

### Abstract

There are several synonyms, such as malignant nephrosclerosis, malignant arteriolar sclerosis, malignant phase of essential hypertension. Essential hypertension is extremely common. It was first identified after the invention of the sphygmomanometer by von Basch in 1893, separating essential hypertension from that associated with glomerulonephritis. Volhardt differentiated between "pale" hypertension of nephritis and the "red" hypertension of the essential type. The former is supposed to be associated with a pressor substance circulating in the blood which is liberated in the later stages by the kidney parenchyma. The latter is the result of arteriosclerotic changes with hypertrophy of the elastica and hyalinization in the precapillary arterioles. Constitution seems to be the only definite etiological factor so far known. Essential hypertension is not common before 40; is most common between 50 and 60. The histology shows a degenerative change in the peripheral

arteries and arterioles producing rather rigid tubes and increasing the peripheral resistance. In the early stages there is increased vasomotoriness with marked fluctuation in the blood pressure. This is elicited by Brown's "cold" test for early stages of hypertension.

The benign hypertension is a chronic ailment, and may run for ten to twenty-five years. The termination is either from congestive heart failure, coronary disease or cerebral hemorrhage. About ten per cent of the deaths are due to renal insufficiency. A few of these kidney deaths are due to a gradual obliteration of individual glomeruli resulting in shrinking of the kidney. This may go on to renal insufficiency. This type, however, is not included in malignant hypertension.

Another small group may be the result of a true glomerulonephritis being superimposed upon the benign hypertension.

By malignant hypertension is understood a condition in which there is usually a history of hypertension, of longer or shorter duration, upon which there is superimposed a rapidly developing and progressive renal insufficiency. The blood pressure rises, the patient becomes pale, loses his appetite, develops weakness, becomes apathetic, sensorium becomes cloudy; there is usually a complaint of severe headache. Examination shows a very high blood pressure, very little edema as a rule, more or less anemia, heart enlarged and pounding, and eye-grounds show evidence of an angiospastic condition of the blood vessels with degenerative changes in the retina; the picture is what is known as hypertensive neuroretinitis or neuroretinopathy. There often is no congestive heart failure associated with it but there may be mild or even severe degrees of heart failure accompanying the kidney change. It occurs principally in younger persons between thirty and forty-five. The blood chemistry will show a retention of metabolites and the patient will proceed rapidly into true uremic coma and will die in uremia, often in convulsions.

The clinical picture is, therefore, one which starts as a benign hypertension, upon which is superimposed the clinical findings of a true nephritis which ends in uremia. Pathologically the kidneys show lesions other than those from a glomerulonephritis. There is extensive degeneration often with necrosis of the arteriolar vessels in the kidney and also endarteritis which bring about the ischemia of the glomeruli and the resultant renal insufficiency. Several cases were reported illustrating the condition.

### Discussion

DR. JOHN F. NOBLE (Saint Paul): Dr. Barron approached me just before the meeting and inquired whether or not I was the only member of the department of pathology present. He seemed relieved when he found I was the only representative present. I find his pathological concepts sound and orthodox. With reference to his clinical description of the red and pale hypertensive patient, representing respectively the case of malignant hypertension and the patient with chronic glomerulonephritis, let me say that, while early in the disease this may be of some value, later when uremia

develops, stances.

I would picture cl times eve stains are diagnosis.

The ter very loose tension as ly, rapid the arteri I believe

DR. H. tation is in mologist cases of general p narily it fundus t atherosoma in its va present then usua Usuall sion is a tendency crossing Not all ever, o may be without the vess cause o likely t sclerosis wall. A upon m findings usually do, how retinal content structu fat is can eas which

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## PROCEEDINGS OF MINNESOTA ACADEMY OF MEDICINE

develops, the patients become very anemic in both instances.

I would also like to emphasize the fact that late in the picture clinical differentiation is very difficult and sometimes even histologic studies are confusing. Special stains are frequently necessary to arrive at a correct diagnosis.

The term malignant hypertension is frequently used very loosely. Dr. Barron has defined malignant hypertension as having certain definite characteristics, namely, rapid onset of uremia and typical necrotic lesions in the arterioles of the kidney. If this term is to be used, I believe some such definition should be made.

DR. H. W. GRANT (Saint Paul): I think this question is important from the standpoint of the ophthalmologist because he is constantly coming in contact with cases of choked disc associated with the characteristic general picture of which Dr. Barron has spoken. Ordinarily it is usual to recognize in examination of the fundus three types of cases: the arteriosclerotic, the atherosomatous sclerosis, and the essential hypertension in its various stages. Atherosomatous sclerosis may be present from birth or until sixteen years of age, and then usually has a tendency to disappear until later life. Usually the characteristic picture of essential hypertension is an infiltration of the vessel wall. This has a tendency to produce an infiltration of the arteriovenous crossing, as these vessels have a common outer coat. Not all changes at the arteriovenous crossings are, however, of this nature, as some distortion at this point may be produced by contraction of the arterial wall without any infiltration. Following the infiltration of the vessel wall there are likely to be hemorrhages because of the necrosis which results. It is much less likely that hemorrhage results in an atherosomatous sclerosis because of the actual thickening of the vessel wall. Apparently all cases of choked disc dependent upon malignant hypertension do not have characteristic findings. Some are present without headache, which is usually one of the more pronounced symptoms. They do, however, have the piling up of fat in the superficial retinal layers probably due to the fact that the lipid content of the retina is higher than that of any other structure of the body, the brain ranking second. This fat is likely to be dissolved out in most sections, but can easily be demonstrated in flat sections of the retina which are unstained.

DR. BARRON (in closing): Dr. Noble asks about the question of the "paleness" in malignant hypertension. I suggested its cause in the discussion but did not emphasize it enough. The "paleness" is due, first, to the spastic condition of the blood vessels, and, second, to the development of the anemia. It is true that in some cases it is not easy to differentiate nephritis from malignant hypertension by the microscopic sections. In a few cases we have true glomerulonephritis superimposed upon the benign hypertension. In malignant hypertension there is no evidence of inflammatory changes which can be seen in glomerulonephritis. The endarteritis is an important finding emphasized by the authorities and it is not due to inflammation.

As to the question about necrosis, we do not believe that the hyalin change seen in the arterioles of essential hypertension is a necrotic one. It seems to be due to a certain degenerative change of the fibers into hyalin material. The staining reaction is often different from that of necrotic material.

After the scientific program, Dr. Barron showed motion pictures which he had taken last summer on the Academy's trip on the Mayo yacht, and also at a picnic which had been held at Dr. Archibald Wilcox's summer home.

The meeting adjourned.

A. G. SCHULZE, M.D., *Secretary*

### Tuberculosis

Reference has been made to the fact that eight diseases registered lower death rates in 1936 than ever before. The one to which the greatest interest attaches is tuberculosis. The decline in its death rate has been practically continuous for 25 years, and there has been a drop of 45 per cent in 10 years and of 76 per cent in 25 years. Eleven years ago, that is, in 1925, an important milestone was passed in the conquest of tuberculosis. Then, for the first time in the history of these insured wage-earners, the tuberculosis death rate fell below 100 per 100,000. Ten years before that, when the mortality rate was 197.8 per 100,000, no one in the whole public health field would have dared to predict that this rate would be lowered over 50 per cent in 10 years. This, however, actually happened. Again, there were few who, even in the middle of the last decade, were optimistic enough to believe that within another 10 years the rate would again be reduced by almost another 50 per cent. Up to 1920 tuberculosis was the leading cause of death among these insured wage-earners; it now ranks seventh.

While it is gratifying that the downward swing of the tuberculosis death rate extended through last year, certain developments in 1936 were not altogether favorable. The decline in the rate from that of the previous year was only 2.9 per cent, as compared with an average annual drop of 7.6 per cent from 1930 to 1935. This retardation in the velocity of the decline must not be construed as too discouraging a development. The downward swing of the mortality rate has been so pronounced that a slowing up in the rate of fall was bound to come. It has happened before within the past 25 years; and there were two years, in fact, when the general downward swing was interrupted by slight increases. Following these interruptions, however, the drop was resumed and was more pronounced than ever. It may easily develop that 1937 will register a decline not far from the average observed from 1930 to 1935.—*Statistical Bulletin, Metropolitan Life Insurance Co., Jan., 1937.*

The first constitutional amendments were drawn by James Madison and submitted to the legislatures of the states on September 25, 1789. The first ten established religious freedom, freedom of speech and press, and the right to petition the government for redress of wrongs. Citizens of those days were determined to reserve to themselves and their several states all possible power; they feared a highly centralized federal government. The amendments were ratified by the required number of states and declared in force December 15, 1791, more than two years after they were proposed.

—Public Relations Committee, Medical Society of the State of New York.

## BOOK REVIEWS

### BOOK REVIEWS

#### BOOKS RECEIVED FOR REVIEW

**SENILE CATARACT.** Methods of Operating. Third Revised Edition. W. A. Fisher, M.D., F.A.C.S. Professor of Ophthalmology, Chicago Eye, Ear, Nose and Throat College; formerly Professor of Clinical Ophthalmology, University of Illinois. 153 pages Illus. Price, \$2.00, flexible binding. Chicago: H. G. Adair Printing Co., 1937.

**OPHTHALMOSCOPY, RETINOSCOPY AND REFRACTION.** With new chapter on Orthoptics. Fourth Revised Edition. W. A. Fisher, M.D., F.A.C.S. Professor of Ophthalmology, Chicago Eye, Ear, Nose and Throat College; formerly Professor of Clinical Ophthalmology, University of Illinois. 210 pages. Illus. Price, \$2.00, flexible binding. Chicago: H. G. Adair Printing Co., 1937.

**THE INTIMATE SIDE OF A WOMAN'S LIFE.** Leona A. Chalmers. 128 pages. Illus. Price, \$1.50, cloth. New York: Pioneer Publications, Inc. 1270 Sixth Ave., 1937.

**MATERIA MEDICA, TOXICOLOGY AND PHARMACOGNOSY.** William Mansfield, A.M., Ph.D. Dean and Professor of Materia Medica and Toxicology, Union University, Albany College of Pharmacy, Albany, N. Y. 707 pages. Illus. Price, \$6.75, cloth. St. Louis: C. V. Mosby Co., 1937.

**OPERATIVE SURGERY.** Fourth Edition. J. Shelton Horsley, M.D., LLD., F.A.C.S. Attending Surgeon, St. Elizabeth's Hospital, Richmond, Va., and Isaac A. Bigger, M.D., Professor of Surgery, Medical College of Virginia, Surgeon-in-Chief, Medical College of Virginia Hospital, Richmond, Va. 1387 pages (2 volumes). Illus. Price, \$15.00, cloth. St. Louis: C. V. Mosby Co., 1937.

**ENDOCRINOLOGY. Clinical Application and Treatment.** August A. Werner, M.D., F.A.C.P., Assistant Professor of Internal Medicine, St. Louis University School of Medicine; Associate Physician, St. Mary's Group of Hospitals; Physician Endocrine Clinic, St. Louis City Hospital; Staff Member, St. Louis City Hospital, Sanitarium and Infirmary; St. Louis Training School for Mentally Defective Children and the Missouri State Hospital No. 1, Fulton, Mo. 672 pages. Illus. Price \$8.50. Philadelphia: Lea & Febiger, 1937.

The author has written a most useful book. It is presented in an easy readable style, includes the recent advances in endocrinology and covers the field in a more adequate manner than any volume which has appeared so far.

The book is divided into fourteen chapters including the autonomic nervous system, calorimetry, the glands in general, the individual glands, obesity, the skin, the teeth, the hair and the diagnosis of endocrine conditions.

The bibliography is extensive with references at the bottom of each page. Illustrations are well chosen and exceptionally good. Many of them are of the author's own cases. Therapy, so important in this field, is dealt with in plain understandable terms and is sound. Pros and cons of controversial points are discussed.

Werner is well known for his ability and clinical research in endocrinology. The volume is written from an internist's point of view. As he states in the preface, "To be a good clinical endocrinologist, one must first be a good internist, and the time is not far distant when, in order to be a good internist, one must be a good endocrinologist."

It is one of the few books on general endocrinology that can recommend to the specialist and general practitioner alike.

L. F. HAWKINSON, M.D.

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**WANTED**—Assistantship or association with general practitioner doing own surgery or with surgeon, by physician with three years' general practice experience. Will go anywhere. Address D-359, care MINNESOTA MEDICINE.

**FOR SALE:** Good location in town of 1,300 population in the best section of Minnesota. Good equipment and good income from the start. Catholic or German Lutheran preferred. Address D-360, MINNESOTA MEDICINE.

**ARE YOU IN NEED** of a refined woman with executive experience, to assume the duties of receptionist in your general office? Would like position with physician, group of physicians, or hospital. References exchanged. Address R-432, care of MINNESOTA MEDICINE.

**POSITION WANTED**—Laboratory and x-ray technician, experienced, excellent references. Will go anywhere. Address D-358, care MINNESOTA MEDICINE.

**WANTED:** For staff service a graduate, unmarried, competent internist with experience in gastro-enterology and gastro-enteric plate readings. Salary \$150 per month with maintenance. Position permanent. Address with photo and references, Superintendent State Sanatorium, San Haven, North Dakota.

**POSITION WANTED**—As assistant in doctor's or dentist's office. Experienced. References. Address Mabel H. Combs, 4820 15th Avenue South, Minneapolis, Minn.

**CLINICAL ANALYSES:** Graduate 1918. Toxicology—five years' experience Coroner, Los Angeles, California. Poisons, drugs, liquors, bacteriology—waters and foods. GOODWIN JOSS LABORATORIES, 225 South Third Street, Minneapolis, Minnesota.

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